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Cooperative ECONOMIC INSECT REPORT

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PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearinghouse and does not assume responsibility for accuracy of the material.

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COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

CORN LEAF APHID and RUSTY PLUM APHID medium to heavy on sorghum in central and southeast Arizona and GREENBUG extremely high on seedling wheat in Natchitoches Parish, Louisiana. (p. 985). SPOTTED ALFALFA APHID damaging to alfalfa in areas of Idaho, Arizona, Colorado and Nebraska; counts light in Kansas, Oklahoma and Arkansas. PEA APHID increasing on alfalfa in Arkansas and moderate in 4 Utah counties. SOUTHERN GREEN STINK BUG and BANDED CUCUMBER BEETLE damaging soybeans in Louisiana. (p. 986). BEET ARMYWORM heavy in some central Arizona alfalfa and VELVETBEAN CATERPILLAR severely defoliating soybeans in 2 Louisiana parishes. (p. 987).

SOUTHERN PINE BEETLE epidemic continues serious in southeastern Texas. (p. 989) and VARIABLE OAK LEAF CATERPILLAR severe in southeastern Oklahoma (p. 991).

SCREW-WORM reported in 14 northern and central Alabama counties and in Dade County, Georgia. (p. 993).

Summary of Insect Conditions - 1960 (continued from page 982)

Ornamental and Shade Tree Insects - (p. 996).

INSECT DETECTION: An eriophyid mite (Aceria neocynodonis) recorded for first time in Nevada. (p. 987). New county records reported were European corn borer in Pickens, Cobb, Catoosa, Cherokee, Paulding, Troup, Butts and Putnam Counties, Georgia (p. 985); sorghum midge in Santa Cruz and Pima Counties, Arizona, and several additional counties in the Texas Panhandle (p. 985); walnut husk fly in Sacramento County, California (p. 987); and boll weevil in Floyd and Armstrong Counties, Texas (p. 988).

Reports in this issue are for week ending October 20 unless otherwise indicated.

WEATHER OF THE WEEK ENDING OCTOBER 23

A week of dry, sunny weather with warm days and cool nights in the southern portion of the Nation favored harvesting operations, but increased the need for moisture in some dry southeastern areas. In northern areas, general precipitation moved from the upper Great Plains to the Atlantic coast on the 18th, 19th and 20th, and rains fell along the North Atlantic coast during the weekend. Precipitation fell in northern areas of the Far West during the latter part of the period.

In the Southeast, many stations have had no rain at all for periods ranging from 3 to 6 weeks, while many others report only insignificant amounts or amounts much less than needed. Soil moisture is short to very short in South Carolina, Georgia, and the western, northern and central portions of Florida.

Precipitation in northern areas east of the Rockies on the 18th to 20th was generally light. A storm which developed off the middle Atlantic coast, however, brought extremely heavy precipitation to Virginia and southern Maryland during the weekend. Totals in Virginia ranged up to nearly 12 inches in central portions and from 2 to 9 inches in the remainder of the State, and flooding occurred along some streams. Over 3 inches of rainfall was reported in southern Maryland. Light to heavy snow fell in the lower Appalachians. A few inches of snow were reported in southwestern Virginia, but in Nicholas County, West Virginia, a fall of 23 inches was reported. The snow was wet and heavy and caused considerable damage to power and communication lines and trees.

Weekend storms off the North Atlantic coast brought strong northeast winds and gales to coastal New England. Heavy sea and surf caused extensive damage to small boats and other property along the shore.

Precipitation in the Far West was generally light, with some snow in the central and northern Rockies, but some heavy amounts of moisture for the season were reported in southern Montana.

Temperatures in northern areas east of the Rockies were below normal at the beginning and end of the week and above during the middle part of the period. Maxima in the 80's were recorded in North Dakota and Minnesota on the warmest days, and 89° at Sioux City, Iowa, on the 17th, was the highest temperature ever recorded there so late in the season. The weekend was abnormally cold in the Pacific Northwest.

Temperatures for the week averaged well below normal in the Pacific Northwest and in southern areas east of the Great Plains, and near to slightly above normal elsewhere. (Summary supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

SOUTHWESTERN CORN BORER (Zeadiatraea grandiosella) - NEW MEXICO - Infesting 70-95 percent of cornstalks inspected in Luna County. (N. M. Coop. Rpt.).

EUROPEAN CORN BORER (Ostrinia nubilalis) - GEORGIA - Infestations general but light in 17 counties (Scott, Sept. 22) and light in Butts and Putnam Counties (Starks); reported for first time in Pickens, Cobb, Catoosa, Cherokee, Paulding, Troup, Butts and Putnam Counties.

CORN LEAF APHID (Rhopalosiphum maidis) - ARIZONA - Medium to heavy infestations present in sorghum in central and southeast areas. (Ariz. Coop. Sur.). OKLAHOMA - Infestations noted in scattered fields of small grain checked east of Hobart, Kiowa County; up to 95 percent of volunteer wheat plants infested in field checked. Also, 100 percent of Johnson grass terminals infested in field of wheat east of Frederick, Tillman County; no infestation noted on planted wheat. Averaged 25 per terminal on Johnson grass in Pushmataha County. (Okla. Coop. Sur.).

RUSTY PLUM APHID (Hysteroneura setariae) - ARIZONA - Infestations medium to heavy on sorghum in central and southeast areas. (Ariz. Coop. Sur.).

GREENBUG (Toxoptera graminum) - LOUISIANA - Populations extremely high on seedling wheat in Natchitoches Parish; predators virtually absent in these fields. (Newsom, Chapin). OKLAHOMA - Light, scattered population (0-4 per plant) noted on volunteer wheat in field checked west of Hobart, Kiowa County. (Okla. Coop. Sur.).

RICE DELPHACID (Sogatia orizicola) - LOUISIANA - Surveys for this vector of hoja blanca disease of rice on 94,900 acres in 22 southern parishes negative. (Newsom, Chapin).

SAY STINK BUG (Chlorochroa sayi) - TEXAS - Light numbers present on grain sorghum heads in Travis County. (Cook).

A LEAFHOPPER (Dikraneura carneola) - UTAH - Numerous on margins of fields of fall grain and on grassy roadsides in Box Elder, Davis and Salt Lake Counties. (Knowlton).

CORN ROOTWORMS (Diabrotica spp.) - SOUTH DAKOTA - Diabrotica spp. caused light to moderate damage to corn in Douglas County. Goose-necked stalks and lodging found in 25 out of 25 cornstalks checked in one field in Aurora County. (Hanten). WISCONSIN - Percent lodging of plants by D. longicornis, by districts, was as follows: Southwest - 0.2; west central - 0.3; south central - 2.5; southeast - 6.3; east central - 0.2. Percent of fields infested, by districts, compared with 1960, was: Southwest - 2 and 18; southeast - 22 and 17.5; south central - 8 and 10. (Wis. Ins. Sur.).

DUSKY SAP BEETLE (Carpophilus lugubris) - IDAHO - Adults attacked silks and developing ears of corn at Caldwell, Canyon County, October 10. (Gittins).

SORGHUM MIDGE (Contarinia sorghicola) - TEXAS - Emergence of adults from grain sorghum samples collected in panhandle area established presence of this pest in Briscoe, Glasscock, Kent, Dickens, Motley, Armstrong, Carson and Fisher Counties (Randolph, Ridgway, Newton) in addition to those reported in CEIR 11(42):961 (PPC). ARIZONA - Very light field infestations of sorghum found in Santa Cruz and Pima Counties; both new county records. Pima County infestation in Tucson area and south; surveys negative in Marana area and westward. Known infested area includes 5 counties and is everything east of a line along the western border of Santa Cruz County, northward through Pima County just west of Tucson and including Graham and Greenlee Counties. (Ariz. Coop. Sur.).

WHEAT CURL MITE (Aceria tulipae) - KANSAS - Colonies common in several large fields of volunteer wheat in Osborne County; only trace infestations on planted wheat. (Somsen).

GRASSHOPPERS - NORTH DAKOTA - Egg survey in northwest counties substantiated adult survey conducted earlier. However, infestation higher at several points because of heavy egg bed concentrations of Camnula pellucida; egg pods averaged 108 per square foot at one point. Other dominant species were Melanoplus bilituratus, M. bivittatus and M. femurrubrum. Egg development about 5 percent in clear stage, 35 percent coagulated, 50 percent eye spot and 10 percent segmented. (Wilson, Brandvick, PPC). UTAH - Melanoplus spp. numerous on foothill farm at River Heights and at North Logan, Cache County. Mostly Melanoplus spp. remain numerous in foothill areas from Salt Lake City southeast to Draper. (Knowlton).

SPOTTED ALFALFA APHID (Therioaphis maculata) - IDAHO - Populations again increasing in many southwestern area hay fields, following warmer weather and reduction in numbers of lady beetle larvae. Aphids exceed 100 per square inch in some fields, predominantly nymphs. Considerable migrations observed. (Waters). Also abundant on hay fields in Mountain Home area, Elmore County; counts occasionally 12 per alfalfa leaf. (Edwards). ARIZONA - Increased in alfalfa in some areas in central part of State; could be a problem to fields in seedling stage at this time. Some fields have infestations of 3-4 per trifoliate leaf. (Ariz. Coop. Sur.). COLORADO - Causing serious damage to fall-planted and some spring-planted alfalfa in Arkansas River Valley. Averaged 6-7 per leaflet on young seedlings; causing yellowing and dying out of plants. (Schweissing). NEBRASKA - Ranged 1.9-135 per sweep in fields surveyed in Franklin County west to State line. (Kishaba). Counts in Greeley and Howard Counties 35.2 and 289 per sweep; 6 sexual forms found in Howard County and 3 in Greeley County. (Stevens). KANSAS - Counts ranged from less than one to 30 per sweep (averaged 15) in central area alfalfa. (Peters). OKLAHOMA - Light (25-50 per sweep) on alfalfa checked in southwest and southeast. (Okla. Coop. Sur.). ARKANSAS - Counts averaged 25 per 25 sweeps of 5-inch net in southern Mississippi County and 50 per 25 sweeps in Searcy County. (Ark. Ins. Sur.).

PEA APHID (Macrosiphum pisi) - UTAH - Moderate in many fields of alfalfa in Salt Lake, Box Elder, Weber and Cache Counties. (Knowlton). WYOMING - Averaged 250 per 100 sweeps on alfalfa in Platte County. (Fullerton). COLORADO - Colonies present on 6 out of 10 plants in alfalfa in Weld County. (Daniels). KANSAS - Ranged 2-20 per sweep in central area alfalfa; averaged about 7 per sweep. (Peters). OKLAHOMA - Light (up to 12 per sweep) on alfalfa in southwest and southeast. (Okla. Coop. Sur.). ARKANSAS - Increasing in alfalfa; 1,000 per 25 sweeps of 5-inch net in southern Mississippi County and 700 in Searcy County. (Ark. Ins. Sur.). WISCONSIN - Averaged about 11 per 10 sweeps in alfalfa in southwest. Incidence of disease and parasitism relatively light; few alate forms found containing eggs. (Wis. Ins. Sur.).

LYGUS BUGS (Lygus spp.) - UTAH - Moderate in alfalfa throughout northern counties; 15 percent nymphs in some fields. (Knowlton). WYOMING - Adults averaged 20 per 100 sweeps in alfalfa in Platte County. (Fullerton). OKLAHOMA - L. lineolaris light to medium (4-6 per sweep) on alfalfa in southeast. (Okla. Coop. Sur.). WISCONSIN - L. lineolaris adults averaged 8 per 10 sweeps. (Wis. Ins. Sur.).

SOUTHERN GREEN STINK BUG (Nezara viridula) - LOUISIANA - Damaging soybeans in East Baton Rouge and St. Landry Parishes; adults and nymphs averaged more than one per linear foot of row in some fields. (Newsom, Chapin).

BANDED CUCUMBER BEETLE (Diabrotica balteata) - LOUISIANA - Adults continued active on soybeans and caused noticeable foliage damage. (Newsom, Chapin).

BEET ARMYWORM (Spodoptera exigua) - ARIZONA - Heavy in some central area alfalfa, particularly on young alfalfa; as high as 300-400 larvae per 100 sweeps in some fields. Moth collections in Mesa Experiment Station light trap have been high during past 2 weeks. (Ariz. Coop. Sur.).

FALL ARMYWORM (Laphygma frugiperda) - OKLAHOMA - Medium populations of 8 per sweep noted in southwest area alfalfa. (Okla. Coop. Sur.). TEXAS - Scattered, light infestations present in few east central counties; no large scale outbreaks reported to date. (Texas Coop. Rpt.).

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) - TEXAS - Heavy, local population attacking 200-300 acres of field peas in lower Rio Grande River Valley at Edinburg, Hidalgo County. (Deer).

VELVETBEAN CATERPILLAR (Anticarsia gemmatilis) - LOUISIANA - New generation severely defoliating soybeans in St. Landry and East Baton Rouge Parishes. (Newsom, Chapin).

A PYRAUSTID (Nomophila noctuella) - VIRGINIA - Larvae numerous in Culpeper County; newly seeded alfalfa plants being cut off at ground level. (Tarpley, Heltzel, Sept. 22).

FIELD CRICKETS (Gryllus spp.) - OKLAHOMA - Averaged 3 per sweep in alfalfa in southeast. (Okla. Coop. Sur.).

A COCCID (Odonaspis ruthae) - NEVADA - Infestation and damage heavy on a Bermuda grass lawn in Las Vegas, Clark County. (Zoller).

AN ERIOPHYID MITE (Aceria neocynodonis) - NEVADA - Infestation and damage heavy in Bermuda grass lawns in Las Vegas-Henderson area, Clark County. Det. by H. H. Keifer. This is a new State record. (Bechtel, Nichols. Zoller).

THRIPS - CALIFORNIA - Hercothrips fasciatus and Thrips abdominalis infestations medium on Artemisia sp. in Davis area of Yolo County. (Cal. Coop. Rpt.).

BILLBUGS (Sphenophorus spp.) - OREGON - Adults common in lawns and on sidewalks in Salem and Corvallis areas during warm days in October. No injury to grasses correlated with presence of weevils. (Capizzi).

RANGE CATERPILLAR (Hemileuca oliviae) - NEW MEXICO - Collected on grassland in Colfax County. (N. M. Coop. Rpt.).

FRUIT INSECTS

TWO-SPOTTED SPIDER MITE (Tetranychus telarius) - CALIFORNIA - Heavy on apples in Santa Cruz, Santa Cruz County. (Cal. Coop. Rpt.).

WALNUT APHID (Chromaphis juglandicola) - CALIFORNIA - Medium infestation on walnut trees in El Cerrito, Contra Costa County. (Cal. Coop. Rpt.).

WALNUT HUSK FLY (Rhagoletis completa) - OREGON - Trapping program concluded; approximately 60 traps scattered in walnut orchards in western area checked, with negative results. (Larson). CALIFORNIA - Medium infestations on English and black walnuts locally in Sacramento, Sacramento County. First record for this county was an adult taken in a wasp nest on October 11; larvae collected October 13. (Cal. Coop. Rpt.).

A WHITEFLY (Dialeurodes sp.) - LOUISIANA - Egg counts considerably higher on untreated satsuma orange trees at Baton Rouge; averaged 150 per 50 leaves. (Newsom, Chapin).

MEXICAN FRUIT FLY (Anastrepha ludens) - CALIFORNIA - Ninth and final treatment of season initiated on residential properties in border-program area, San Diego County. Fifth and final aerial treatment of canyon areas completed. Fruit and trap inspections on both sides of United States-Mexican border remain negative. (Cal. Coop. Rpt.).

Citrus Insect Situation in Florida - Mid-October - CITRUS RUST MITE (Phyllocop-truta oleivora) infested 72 percent of groves (norm 65 percent); 40 percent economic (norm 38 percent). Further increase expected in most districts; statewide population will remain above average. Highest districts with threatening conditions are Bartow, Gainesville, west coast and Brooksville. CITRUS RED MITE (Panonychus citri) infested 29 percent of groves (norm 45 percent); 7 percent economic (norm 22 percent). Statewide population far below average; all districts in low range with little increase expected. TEXAS CITRUS MITE (Eutetranychus banksi) infested 26 percent of groves; 4 percent economic. All districts presently have low populations; infestations will gradually become more numerous. Very few heavy infestations will occur before mid-November. FLORIDA RED SCALE (Chrysomphalus aonidum) infested 64 percent of groves (norm 61 percent); 3 percent economic (norm 12 percent). Statewide populations will remain below average; infestations unusually light in all districts with very few expected to become troublesome. Parasite activity now holding all scales at low level. PURPLE SCALE (Lepidosaphes beckii) infested 68 percent of groves; 2 percent economic. Infestations will continue light in all districts. CHAFF SCALE (Parlatoria pergandii) infested 59 percent of groves; all infestations light with only slight increase likely to occur. (Simanton, Thompson, Johnson (Citrus Exp. Sta., Lake Alfred)).

CITRUS RED MITE (Panonychus citri) - LOUISIANA - Populations increased on untreated plots of satsuma orange in Baton Rouge. (Newsom, Chapin).

WESTERN GRAPE LEAF SKELETONIZER (Harrisina brillians) - CALIFORNIA - Fourth and final treatment of season started October 9 in Kerman area, Fresno County. Treatment of dooryard grapevines in buffer zone completed; house-to-house survey will resume in late October. No extension of infestation reported. (Cal. Coop. Rpt.).

TRUCK CROP INSECTS

TOMATO FRUITWORM (Heliothis zea) - LOUISIANA - Caused 30 percent damage to tomato plots at Baton Rouge. (Newsom, Chapin).

LIMA-BEAN POD BORER (Etiella zinckenella) - CALIFORNIA - Medium populations on lima beans in Gustine area, Merced County. (Cal. Coop. Rpt.).

CABBAGE LOOPER (Trichoplusia ni) - MARYLAND - Moderate to heavy on 2 acres of cabbage at Beltsville. (U. Md., Ent. Dept.). LOUISIANA - Larvae abundant on untreated cabbage in Baton Rouge; 95 percent of plants infested. Very light on untreated cabbage at Diamond; averaged 4 first instars and 4 eggs per 10 plants. (Newsom, Chapin).

SALT-MARSH CATERPILLAR (Estigmene acrea) - CALIFORNIA - Heavy populations, with damage to radishes in San Jose area, Santa Clara County. (Cal. Coop. Rpt.).

COTTON INSECTS

BOLL WEEVIL (Anthonomus grandis) - TEXAS - Collected in Floyd County and in 2 separate fields in Armstrong County for new county records. (Texas Coop. Rpt.; Hatchett, Jansa, Russell).

PINK BOLLWORM (Pectinophora gossypiella) - FLORIDA - Two larvae collected from hibiscus on Upper Matecumbe Key, Monroe County, October 5. (Fla. Coop. Sur., PPC). CALIFORNIA - Detection activities continue; gin trash inspection begun in Kings and Tulare Counties and continued in Kern, Riverside and Imperial Counties. Inspections will begin in Fresno, Madera and Merced Counties following week. (Cal. Coop. Rpt.).

CELERY LEAF TIER (Udea rubigalis) - CALIFORNIA - Heavy numbers of larvae and pupae recovered in gin trash in Blythe area, Riverside County. (Cal. Coop. Rpt.).

MEAL MOTH (Pyralis farinalis) - CALIFORNIA - Heavy larval numbers recovered from gin trash in Lemoore, Kings County. (Cal. Coop. Rpt.).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

SOUTHERN PINE BEETLE (Dendroctonus frontalis) - TEXAS - Epidemic continues serious in southeast counties. Aerial inspection during mid-September detected only 40 new spots, a definite decrease in number found previously during summer inspections; however, 65 new spots located September 26. This increase in late September is reverse of previous year's experience. Hurricane Carla brought rains of 4-10 inches to epidemic area, thus hampering control operations. Intensive controls will be necessary, when ground conditions permit, to prevent large overwintering beetle population. (Young; Texas For. Pest Comm.). VIRGINIA - Still active on Eastern Shore; no severe buildup reported, although some new small infestations observed. (Northeast. For. Pest Rpt., Oct. 16).

BLACK TURPENTINE BEETLE (Dendroctonus terebrans) - VIRGINIA - Scattered infestations noted in eastern and south central areas. (Northeast. For. Pest Rpt., Oct. 16.). LOUISIANA - Abundant in residue resulting from logging of spruce and loblolly pine. (Newsom, Chapin).

ENGRAVER BEETLES (Ips spp.) - VIRGINIA - I. grandicollis killed group of short-leaf and white pines in Chatham County. Ips spp. infesting pine logging slash and hurricane blowdowns in eastern area; however, no live trees involved. Single and small groups of loblolly pine killed in other areas of eastern section. Several small infestations reported in Virginia pine in north central area and scattered infestations observed in south central area. (Northeast. For. Pest Rpt., Oct. 16). LOUISIANA - I. avulsus, I. calligraphus and I. grandicollis abundant in residues from logging of spruce and loblolly pine. (Newsom, Chapin). TEXAS - Ips sp. infesting 20 acres of loblolly pine in Jefferson County. (Young; Texas For. Pest Comm.).

PALES WEEVIL (Hylobius pales) - VIRGINIA - Caused minor damage in 2 loblolly pine plantations in north central area. RHODE ISLAND - Damage to 3-year-old white spruce on private land in Scituate Watershed area amounted to 500 dollars. (Northeast. For. Pest Rpt., Oct. 16).

PINE ROOT COLLAR WEEVIL (Hylobius radicis) - NEW YORK - Damage increasing generally in State. Damage to Scotch and red pine plantations reported in Warren County. (Northeast. For. Pest Rpt., Oct. 16).

WHITE-PINE WEEVIL (Pissodes strobi) - MARYLAND - Generally abundant; moderate damage noted in plantation on Pretty Boy Watershed, northwest Baltimore County. Also damaging scattered Norway spruce in western part of State. NEW YORK - Damaged white spruce and Douglas-fir plantings near Cortland, Cortland County; also active in red pine plantations in Greene and Schenectady Counties. Heavily damaged Scotch pine in plantation in State Reforestation Area Tompkins No. 3. (Northeast. For. Pest Rpt., Oct. 16).

A PINE WEEVIL (Pachylobius picivorus) - WEST VIRGINIA - Damaged pine reproduction on cutover lands in Pocahontas County. (Northeast. For. Pest Rpt., Oct. 16).

A PINE BARK BORER (Acanthocinus sp.) - LOUISIANA - Abundant in residues resulting from logging of spruce and loblolly pine. (Newsom, Chapin).

SPRUCE BUDWORM (Choristoneura fumiferana) - MAINE - Egg mass survey in Squapan Lake area, Aroostook County, indicates heavy deposition on fir in general area; heavy defoliation of fir in area noted earlier in year. Parasitism of larvae not sufficient to effect natural control. Isolated heavy infestation at Bancroft, 30 miles south of Houlton, Aroostook County, detected late in season, but total size not yet determined. Possible control in 1962 will be based on complete analysis, later this fall, of egg mass survey data and present condition of trees in Squapan Lake area. (Northeast. For. Pest Rpt., Oct. 16).

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana) - WEST VIRGINIA - Common on red pine in 4 northern panhandle counties. (Northeast. For. Pest Rpt., Oct. 16).

NANTUCKET PINE TIP MOTH (Rhyacionia frustrana) - Continued a pest of young loblolly pine in MARYLAND, VIRGINIA and WEST VIRGINIA. (Northeast. For. Pest Rpt., Oct. 16).

A SPRUCE NEEDLE MINER (Epinotia nanana) - NEW YORK - Damaged spruce in the Lowville district, Lewis County. (Northeast. For. Pest Rpt., Oct. 16).

RED-HEADED PINE SAWFLY (Neodiprion lecontei) - NEW YORK - Infestations scattered throughout red pine plantations; some control applied locally. New infestations in Franklin County light; moderate to heavy in Lewis County, with virus causing considerable mortality. New infestations caused very heavy damage in Warren County. MARYLAND - Infestations light; noticeable feeding observed in 2 white and Scotch pine plantations. VIRGINIA - Increased in numbers and may become serious. Caused severe defoliation in 2-year-old, 120-acre loblolly pine plantation in Essex County. Few central and south central (Piedmont) areas showed defoliation with some killing of loblolly, pitch and Virginia pines in small groups. WEST VIRGINIA - Relatively heavy in Webster, Braxton, Nicholas and Tyler Counties on red and Scotch pines. KENTUCKY - Several 15-30 acre infestations in south central and western areas. (Northeast. For. Pest Rpt., Oct. 16).

PINE SAWFLIES - An outbreak of Neodiprion pratti pratti has occurred in MARYLAND, VIRGINIA and NORTH CAROLINA for past few years. Defoliation continued extensive on Virginia, pitch and shortleaf pines during 1961, but was less severe than in 1960. Egg surveys in these states should indicate if outbreak is finally declining. Egg surveys of 1960 indicated 1961 defoliation would be severe; however, protracted cool, wet weather decimated larval populations in many places early this year by interfering with development as well as permitting high incidence of disease. Even where larval populations remained high, interference with development was so great defoliation was not in proportion to larval numbers. Natural control forces were documented in 1961 by study of pupal stage in Virginia. Studies were made in stands moderately to heavily defoliated in 1960. Biological agents, including mites, ants and parasites, effected nearly 90 percent control of pupae. (Northeast. For. Pest Rpt., Oct. 16). TEXAS - An undetermined species defoliated 1-12 pine seedlings in 8-10 scattered spots on a 400-acre tract in Montgomery County. (Young; Texas For. Pest Comm.).

YELLOW-HEADED SPRUCE SAWFLY (Pikonema alaskensis) - NEW YORK - Small outbreak reported in white spruce plantation at Crown Point, Essex County. (Northeast. For. Pest Rpt., Oct. 16).

LARCH SAWFLY (Pristiphora erichsonii) - MAINE - Populations abundant in Caratunk area, Somerset County, and on young trees in Hancock County. NEW YORK - Infested 35-acre larch plantation in Tug Hill area; 10 acres heavily defoliated this year. Scattered dead trees found in portions defoliated in 1960. Larch generally infested with light to medium populations in Saranac area, Clinton County, and in Lowville area, Lewis County; levels slightly lower than in 1960. (Northeast. For. Pest Rpt., Oct. 16).

PINE LEAF APHID (Pineus pinifoliae) - NEW YORK - Controls applied to local, heavy infestation at Fish Creek Pond Public Campsite; results not reported. (Northeast. For. Pest Rpt., Oct. 16).

FALL WEBWORM (Hyphantria cunea) - MAINE - Recently caused complete defoliation of some hardwoods in central and southern areas. (Northeast. For. Pest Rpt., Oct. 16).

FOREST TENT CATERPILLAR (Malacosoma disstria) - General infestations apparently increasing in western MASSACHUSETTS; however, populations in PENNSYLVANIA, WEST VIRGINIA and northern MARYLAND apparently decreasing. (Northeast. For. Pest Rpt., Oct. 16).

FALL CANKERWORM (Alsophila pometaria) - Apparently building up in conjunction with gypsy moth in MASSACHUSETTS and NEW YORK. (Northeast. For. Pest Rpt., Oct. 16).

SATIN MOTH (Stilpnotia salicis) - NEW YORK - Up to 100 percent defoliation of poplar reported from Champlain, Clinton County. (Northeast. For. Pest Rpt., Oct. 16).

LOCUST LEAF MINER (Xenochalepus dorsalis) - Common on black locust in WEST VIRGINIA and western PENNSYLVANIA. (Northeast. For. Pest Rpt., Oct. 16).

A SATURNIID (Hemileuca sp.) - NEW MEXICO - Adults laying eggs on cottonwood trees in White Sands National Monument, Otero County. (N. M. Coop. Rpt.).

WALNUT CATERPILLAR (Datana integerrima) - NEW YORK - Defoliating black walnut in Lowville area, Lewis County. (Northeast. For. Pest Rpt., Oct. 16).

VARIABLE OAK LEAF CATERPILLAR (Heterocampa manteo) - OKLAHOMA - Infestations severe in southeast counties with approximately 90 percent defoliation of some trees in Choctaw, Latimer, Le Flore and Pushmataha Counties; very light infestation in Stillwater area, Payne County. (Okla. Coop. Sur.).

ORANGE-STRIPED OAKWORM (Anisota senatoria) - Infestations increasing on oak in WEST VIRGINIA and in central and southern RHODE ISLAND. (Northeast. For. Pest Rpt., Oct. 16). VIRGINIA - Feeding on pin oak at Stuart, Patrick County. (Rowell, Tarpley, Olinger, Oct. 5).

A TORTRICID (Argyrotoxa semipurpurana) - Several local, heavy infestations reported from 4 western counties of MASSACHUSETTS, with cankerworms associated with infestations on several species of oak. Leaf roller apparently increasing in severity in this area of Massachusetts and in several adjacent areas of NEW YORK. (Northeast. For. Pest. Rpt., Oct. 16).

A STRIPED OAK CATERPILLAR - TEXAS - Probably Datana sp., defoliating species of red oak group in southeastern counties. (Young; Texas For. Pest Comm.).

A WEEVIL (Apion walshii) - NEW HAMPSHIRE - Birch catkins and cones throughout State heavily infested by this weevil and unidentified lepidopterous larvae, resulting in little or no seed production. (Northeast. For. Pest Rpt., Oct. 16).

ASIATIC OAK WEEVIL (Cyrtepidomus castaneus) - Oak defoliation general throughout WEST VIRGINIA and of light intensity in central PENNSYLVANIA. (Northeast. For. Pest Rpt., Oct. 16).

GOLDEN OAK SCALE (Asterolecanium variolosum) - WEST VIRGINIA - Apparently killed some oaks defoliated by Asiatic oak weevil in Pendleton County. (Northeast. For. Pest Rpt., Oct. 16).

OYSTERSHELL SCALE (Lepidosaphes ulmi) - NEW YORK - Infestation general on beech in Ulster County. (Northeast. For. Pest Rpt., Oct. 16).

COCCIDS - NEW YORK - Cryptococcus fagi heavy on beech in a 13,000-acre private park in Saratoga County; Nectria infection not observed. Few lady beetle larvae

feeding on the coccid. Infestations of C. fagi heavy in Schoharie, Delaware, western Cortland and Saratoga Counties; considerable beech mortality of unknown cause also noted in same counties. New infestations of C. fagi found in Warren, Washington and Saratoga Counties. NEW HAMPSHIRE - Infestations of C. fagi light on eastern and heavy on western slopes of White Mountains. Nectria infection, however, more common on eastern slopes where another coccid, Xylococcus betulae, appears quite common on beech; also noted on yellow and paper birch. This insect probably another contributing factor to already complex insect-disease relationship. Twice-stabbed lady beetle (Chilocorus stigma) abundant throughout White Mountains. (Northeast. For. Pest Rpt., Oct. 16).

AN APHID (Pterocomma smithiae) - COLORADO - Infesting weeping willow in Las Animas County. (Zonich, Hantsbarger).

PERIODICAL CICADA (Magicicada septendecim) - Damage to several hardwoods in western VIRGINIA and southern Grant and northern Pendleton Counties, WEST VIRGINIA, has been quite prominent. (Northeast. For. Pest Rpt., Oct. 16).

A NOTODONTID (Schizura ipomoeae) - TEXAS - Feeding on leaves of redbud in Brazos County. (Burke).

COWPEA WEEVIL (Callosobruchus maculatus) - CALIFORNIA - Population heavy on passionvine in Richmond, Contra Costa County. (Cal. Coop. Rpt.)..

FLATHEADED BORERS - OREGON - Undetermined species attacked lined-out plantings of arborvitae and Irish juniper in Portland area nurseries, with damage up to 50 percent of plants. (Nicolaison).

FLETCHER SCALE (Lecanium fletcheri) - INDIANA - Infesting arborvitae in Fort Wayne area, Allen County; some trees reported dying. (Schuder).

A PIT SCALE (Asterolecanium arabidis) - OREGON - Infesting planting of English hybrids of Scotch broom at Medford, Jackson County, causing considerable injury. Det. by H. L. McKenzie. (Gentner).

ROSE LEAFHOPPER (Edwardsiana rosae) - UTAH - Discoloring rose foliage at Brigham City and Willard, Box Elder County. (Knowlton).

THRIPS - CALIFORNIA - Thrips abdominalis heavy on Centaurea solstitialis in Davis area of Yolo County. Probably Sericothrips variabilis, heavy on Prunus emarginata in Eleven Pines, El Dorado County. (Cal. Coop. Rpt.).

SPIDER MITES - NEVADA - Infestations of undetermined species heavy on many trees, shrubs and flowers in Reno-Sparks area, Washoe County. (Coop. Rpt.).

A BUD MITE (Aceria camelliae) - CALIFORNIA - Heavy population present on camellia plants in El Cerrito, Contra Costa County. (Cal. Coop. Rpt.).

INSECTS AFFECTING MAN AND ANIMALS

FACE FLY (Musca autumnalis) - ARKANSAS - Cattle in 12 northern counties inspected with negative results. (Ark. Ins. Sur.). KANSAS - Adults migrated into Entomology Department buildings at Manhattan. (Peters).

HORN FLY (Haematobia irritans) - SOUTH CAROLINA - Populations decreased considerably. (Nettles et al., Oct. 18). ARKANSAS - Populations decreased greatly; in areas of light frost cattle nearly free of flies. (Ark. Ins. Sur.). LOUISIANA - Noticeable increase in populations in East Baton Rouge, St. Landry and Natchitoches Parishes. (Newsom, Chapin). TEXAS - Increased in north central area but generally decreased statewide. (Texas Coop. Rpt.). OKLAHOMA - Populations ranged to 1,000 per head in southeastern area; 200-400 on cattle in southwestern area. (Okla. Coop. Sur.). NEBRASKA - Ranged from 30 to 250 per head in central area. (Roselle).

WASHINGTON - Infested cattle near Othello, Adams County, and Walla Walla, Walla Walla County; ranged 50-250 per infested animal. (Brannon).

STABLE FLY (Stomoxys calcitrans) - ARKANSAS - Populations decreased greatly; in areas of light frost, cattle nearly free of flies. (Ark. Ins. Sur.).

SCREW-WORM (Callitroga hominivorax) - GEORGIA - Infestation found in Dade County. (Anim. Dis. Erad. Div., Oct. 16). ALABAMA - Reported in 14 northern and central counties. (Buttram, Oct. 20). OKLAHOMA - Continues a pest in central third of State. (Okla. Coop. Sur.). TEXAS - Some decrease in number of cases but continues a problem in many areas. (Texas Coop. Rpt.).

MOSQUITOES - UTAH - Annoying at Bountiful, Davis County. (Knowlton). LOUISIANA - Annoying in Livingston Parish. (Newsom, Chapin). INDIANA - Extremely abundant in Tippecanoe County, particularly in playground areas. (Matthew).

HOUSE FLY (Musca domestica) - UTAH - Troublesome in several northern communities. (Knowlton). OKLAHOMA - A nuisance around buildings and homes. (Okla. Coop. Sur.).

TABANIDS (Tabanus spp.) - OKLAHOMA - Counts 3 per animal on cattle in southeastern area. (Okla. Coop. Sur.).

PUSS CATERPILLAR (Megalopyge opercularis) - SOUTH CAROLINA - Man experienced severe pain, stiffness in neck and paralysis from mandible to elbow as a result of contact with this species at Williston, Barnwell County. (Nettles et al., Oct. 14).

CHIGGERS - LOUISIANA - Severely annoying in Plaquemines Parish. (Newsom, Chapin).

CAT FLEA (Ctenocephalides felis) - CALIFORNIA - Very annoying household infestations in San Francisco Bay area, Alameda County. (Cal. Coop. Rpt.).

BROWN DOG TICK (Rhipicephalus sanguineus) - MARYLAND - Infested homes in Frederick and Dorchester Counties. (U. Md., Ent. Dept.).

STORED-PRODUCT INSECTS

INDIAN-MEAL MOTH (Plodia interpunctella) - SOUTH DAKOTA - Larvae numerous in stored corn in Brookings, Brookings County. (Walstrom).

RED FLOUR BEETLE (Tribolium castaneum) - WYOMING - Local, adult infestations in 6 granaries in Johnson, Sheridan, Campbell and Converse Counties. (Fullerton).

SAW-TOOTHED GRAIN BEETLE (Oryzaephilus surinamensis) - OKLAHOMA - Infested stored grain in Sequoyah County. (Okla. Coop. Sur.). WYOMING - Local, adult infestations in 6 granaries in Johnson, Sheridan and Converse Counties. (Fullerton). CALIFORNIA - Heavy in kitchen cereals in Palmdale and Northridge. (Cal. Coop. Rpt.). WASHINGTON - Infested barley at Lowden. (Brannon).

CIGARETTE BEETLE (Lasioderma serricorne) - VIRGINIA - Heavy infestation in cereal products in greenhouse at Blacksburg, Montgomery County. (Tarpley, Pienkowski, Oct. 16).

BENEFICIAL INSECTS

LADY BEETLES - OKLAHOMA - Light to medium populations of several species on alfalfa in southwestern area; light populations on alfalfa in southeastern area. (Okla. Coop. Sur.). IDAHO - Adults emerged in hayfields infested with spotted alfalfa aphid in southwestern area; newly emerged adults ranged to 10 per square

foot, previous week pupae ranged 200 per square foot. (Waters). WYOMING - Hippodamia sp. adults and larvae averaged 15 per 100 sweeps in alfalfa in Platte County. (Fullerton).

MISCELLANEOUS INSECTS

BOXELDER BUG (Leptocoris trivittatus) - OREGON - Extremely abundant around homes in rural areas of Salem week of October 15. (Capizzi). UTAH - Very heavy populations about homes locally at Avon, Cache County. (Knowlton). WYOMING - Adults became nuisance in many homes in Johnson and Sheridan Counties. (Fullerton). NORTH DAKOTA - Heavy, troublesome infestations in most sections of State. (N. D. Ins. Sur.). SOUTH DAKOTA - Very numerous in eastern area. (Hanten). NEBRASKA - Moderate to heavy populations in eastern and eastern sandhills areas. (Roselle). KANSAS - Congregating in large numbers around homes in Riley County. (Thompson).

A GRASS BUG (Arhyssus barberi) - OREGON - Entered homes in Buttercreek area, Umatilla County. (Stewart).

PSYLLIDS (Pachypsylla spp.) - KANSAS - Extremely numerous around homes over much of State. (Thompson).

EUROPEAN EARWIG (Forficula auricularia) - NEVADA - Entered homes, offices and stores in Elko, Elko County. (Earnist).

SUBTERRANEAN TERMITES - UTAH - Damaged home in Deweyville, Box Elder County. (Knowlton).

SALT-MARSH CATERPILLAR (Estigmene acrea) - ARIZONA - Migrating larvae a problem around homes near cotton in central area. (Ariz. Coop. Sur.).

A SOD FLY (Metoponia rubriceps) - CALIFORNIA - Populations medium on a stucco house in San Bruno, San Mateo County. (Cal. Coop. Rpt.).

ANTS - OREGON - Winged forms of concern to homeowners in Willamette Valley during early October. (Capizzi). MARYLAND - Monomorium pharaonis appeared in a building locally in Prince Georges County and Acanthomyops interjectus swarmed near a home in Montgomery County. (U. Md., Ent. Dept.).

MILLIPEDS - SOUTH DAKOTA - Numerous in basements and other sheltered places in eastern area. (Spawn).

LIGHT TRAP COLLECTIONS

	Pseud. unip.	Agrot. ips.	Perid. saucia	Prod. ornith.	Laphyg. frug.	Trich. ni	Heliothis zea vires.
ARIZONA							
Mesa 10/12-18			1	47		34	167
ARKANSAS							
Hope 10/12-19	13	12					58
Morrilton 10/12-19	32	35					210
Fayetteville 10/12-19							5
FLORIDA							
Gainesville 10/12	5	3		1	2		2
Quincy 10/2, 10	8	9		47			27 2
KANSAS							
Garden City 10/13, 16	6	2	5				7
Hays 10/10, 12, 14, 17	5	2	5	1			19
Manhattan 10/14, 16-17	6			7			27
LOUISIANA							
Baton Rouge 10/14-19	14	1		10	1	1	20
MISSISSIPPI							
*Stoneville 10/13-19	343	60	9	49	29	343	505 2
NEBRASKA							
North Platte 10/12-18		861	45	2	18		29 2
Lincoln 10/3-14	25	56	21	10	2		307
Scotts Bluff Exp. Sta. 10/8-16	17	37	6				
SOUTH CAROLINA							
Charleston 10/9-15	13	17		20	42	5	31 6
Clemson 10/14-20	10	1		11	2		8
TENNESSEE (Counties)							
Monroe 10/10-16	24	16		16			40
Maury 10/10-16							8
Robertson 10/10-16	32	16			32		160
Cumberland 10/10-16	1	1					1
Greene 10/10-16		4		4	4		16
Blount 10/10-16		16		8			16
Johnson 10/10-16	32	16	8	24	12		252
TEXAS							
*Brownsville 10/6-13						248	36
Waco 10/14-20	36	6	118	14		50	253 2
WISCONSIN							
Middleton 10/16-19	3	2	6				7
Madison 10/16-18	9	3	2				18
Mazomanie 10/10-16	6	10	8				10
De Forest 10/10-16	12	10	15				7

* Two traps - Stoneville; 5 traps - Brownsville.

Additional Light Trap Collections: BEET ARMYWORM (Spodoptera exigua) - ARIZONA - Mesa (10/12-18) - 1,806. VELVETBEAN CATERPILLAR (Anticarsia gemmatalis) - SOUTH CAROLINA - Charleston (10/9-15) - 59.

Summary of Insect Conditions - 1960
(continued from page 982)

ORNAMENTAL AND SHADE TREE INSECTS

Ornamental Insects: As in 1959, BAGWORM (Thyridopteryx ephemeraeformis) was the most frequently reported and most widespread of the lepidopterous species infesting ornamentals during the 1960 season. The pest appeared to be spreading in southern Fairfield County, CONNECTICUT, where some serious, localized infestations were observed. Injury was rather heavy in DELAWARE during 1960, with several possible deaths of ornamentals occurring in northern New Castle and central Kent Counties. First instars were initially noted on cedars and arborvitae in Kent County during May. Larvae became common to abundant on mimosa, pines, dogwood, sycamore and many other hosts throughout the State, development being completed in most areas of Delaware by mid-August. Infestations were common, but somewhat below normal, on evergreens in all sections of MARYLAND and were prevalent on conifers throughout VIRGINIA. Bagworm occurred mainly in the northern Piedmont in NORTH CAROLINA, where it caused defoliation and mortality, and was quite prevalent on various coniferous shrubs in TENNESSEE. Infestations appeared in June on arborvitae in Jefferson Davis Parish and on pyracantha in Orleans Parish, LOUISIANA, and were rather heavy and general over TEXAS during 1960. Bagworm caused heavy damage to evergreens in most areas of OKLAHOMA, the loss of shrubs, because of untreated infestations, being not uncommon during the summer in many communities. Minor infestations occurred on many varieties of plants in MISSOURI during the season. As in 1958 and 1959, bagworm was a problem on junipers, arborvitae, Norway spruce and some deciduous trees and shrubs in KANSAS. The pest was more serious in the State because of the appearance of new larval populations in late June, July and August on evergreens on which control was obtained for the first population in May. Populations returned to normal in INDIANA during the 1960 season, being important on both deciduous and evergreen plants.

Another PSYCHID (Apterona crenulella) extended its known range in CALIFORNIA into Butte and El Dorado Counties. Although heavy populations occurred without noticeable damage, the snail-like mud cases were a nuisance.

Larvae of AZALEA LEAF MINER (Gracilaria azaleella) were common and active in azaleas in DELAWARE during late May and early June and again in late August and early September. LILAC LEAF MINER (G. syringella) was extremely common in MONTANA during 1960, both east and west of the Continental Divide.

Several noctuids were reported troublesome and damaging during 1960. IRIS BORER (Macronoctua onusta) damaged plants in South Kingston, Washington County, RHODE ISLAND, on August 9, and was troublesome in various hosts over IOWA during the 1960 season. CORN EARWORM (Heliothis zea) was observed feeding on chrysanthemum in New Orleans, LOUISIANA, in September.

LILAC BORER (Podosesia syringae syringae) was reported from numerous areas of CONNECTICUT during 1960 and was troublesome in various hosts over IOWA. Unspecified BORERS in various ornamentals, especially lilac, dogwood and rhododendron, appear to be a problem that is becoming more intensive in PENNSYLVANIA.

Various other lepidopterous pests were reported from several sections of the Nation during 1960 as damaging or infesting various ornamentals. In New England, infestations and damage by ARBORVITAE LEAF MINER (Argyresthia thuiella) were heavy on arborvitae in Kennebec County, MAINE, and SATIN MOTH (Stilpnotia salicis) caused complete defoliation of some ornamental poplars in Berlin, Coos County, NEW HAMPSHIRE. In New Castle County, DELAWARE, larvae of RED-HUMPED CATERPILLAR (Schizura concinna) were very common on dogwood in late August, causing moderately heavy feeding injury, and larvae of a SPHINGID (Dolba hylaeus) attacked Japanese and English holly in one area of the county during early July.

Larvae of another SPHINGID (Pseudosphinx tetrio) were collected on frangipani in FLORIDA at Sarasota, Sarasota County, on August 28. This is first record of this species for Sarasota County and is the northernmost record for the State.

In the extreme western portion of the Nation, a NYMPHALID (Agraulis vanillae) caused considerable defoliation of ornamental passionvines in CALIFORNIA, but did not damage commercial plantings of this host. In ALASKA, an undetermined species of LEAF ROLLER rolled leaves of delphiniums in Cook Inlet and Tanana Valley areas during 1960, and a SPEAR-MARKED BLACK MOTH (Eulype hastata) appeared to be diminishing in numbers, although it remained numerous in some areas of the State.

Several species of Coleoptera were reported troublesome on ornamentals during 1960. JAPANESE BEETLE (Popillia japonica) was reported more often than other coleopterous species and was of considerable concern in a number of Eastern States. It was generally more abundant in VERMONT, especially in the Windsor, Westminster and Bradford areas. In RHODE ISLAND, mature larvae were observed forming pupal cells in soil at Narragansett, Washington County, on June 3. Adults were observed in North Providence and Smithfield, Providence County, on June 29, and by July 6 complaints were numerous from all areas of the State. Adults and larvae were numerous in some localized areas of CONNECTICUT. Most of these locations were in new developments, formerly fields or brush areas, where the entire areas were regraded. Larval damage to these new lawns was extensive, with other local vegetation also being damaged. Damage by Japanese beetle in northwestern PENNSYLVANIA was more severe than usual during 1960 and numbers in MARYLAND were generally up over those of 1959, with numerous requests for control information from homeowners in suburban sections of the State. Japanese beetle caused considerable concern throughout VIRGINIA during the spring and summer of 1960, adults feeding on a variety of forest and shade trees, defoliating grapes and Virginia creeper in some areas and heavily attacking linden and horsechestnut.

Heavy adult flights of ASIATIC GARDEN BEETLE (Autoserica castanea) occurred in the Narragansett area of Washington County, RHODE ISLAND, during mid-May and heavy numbers were observed on American holly during July at Hyattsville, Prince Georges County, MARYLAND. Moderate numbers of ROSE CHAFER (Macrodactylus subspinosus) caused moderate damage to many plant species in areas of Androscooggin and Sagadahoc Counties, MAINE, and were abundant in Chittenden and Washington Counties, VERMONT. Adults were abundant on rose locally in Washington County, RHODE ISLAND, during early June.

BLACK VINE WEEVIL (Brachyrhinus sulcatus) infested Taxus in many communities of CONNECTICUT during 1960, feeding upon the roots and foliage, and larvae caused the loss of 60 percent of small rhododendron plants in pots at a RHODE ISLAND nursery. POPLAR-AND-WILLOW BORER (Sternochetus lapathi) caused heavy damage locally on pussy willow in the Fiskeville area of Providence County, Rhode Island. Adults of a JAPANESE WEEVIL (Pseudocneorhinus bifasciatus) fed heavily on a variety of shrubs in northern New Castle County, DELAWARE, in early September and another JAPANESE WEEVIL (Calomycterus setarius) and P. bifasciatus attacked deciduous ornamentals in central and southern sections of MARYLAND during July and August. Adults of ROSE CURCULIO (Rhynchites bicolor) fed on tips of roses in Narragansett, Washington County, RHODE ISLAND, in late June. In UTAH, roses were damaged by rose curculio and another WEEVIL (Brachyrhinus sp.). A LILAC WEEVIL (Brachyrhinus meridionalis) was damaging in Ravalli and Missoula Counties, MONTANA, during the 1960 season.

Several other species of Coleoptera were reported troublesome during 1960. A NITIDULID (Conotelus mexicanus) was extremely abundant on flowers, such as roses and chrysanthemums, in southern counties of NEW MEXICO. PINE COLASPIS (Maecolaspis pini) caused considerable damage to ornamental pine, spruce and cypress in East Baton Rouge, Jefferson Davis, Acadia and West Feliciana Parishes, LOUISIANA, during May. However, there were no infestations on commercial stands of pine in the State. Adults of a BLISTER BEETLE (Macrobasis sp.) infested ornamental mountain ash in South Kingston, RHODE ISLAND, during late June.

Various species of APHIDS were reported infesting ornamentals during 1960 in several states. Among these were SNOWBALL APHID (Anuraphis viburnicola) which occurred on viburnum in the East Greenwich area of Kent County, RHODE ISLAND, during early June and ROSE APHID (Macrosiphum rosae) which became moderately abundant on roses in Narragansett, Washington County, late in the summer. CHRYSANTHEMUM APHID (Macrosiphoniella sanborni) was abundant on chrysanthemums in northern New Castle County, DELAWARE, in early May. Another APHID (Cinara tujaefilina) was quite common on arborvitae in most parts of OKLAHOMA during late winter and early spring. Light numbers again appeared the following October in the Stillwater area, Payne County, and moderate populations were reported in the south central area of the State during late December. Populations of SPIREA APHID (Aphis spiraeicola) were below normal in UTAH during 1960, but POTATO APHID (Macrosiphum euphorbiae) did cause some damage to ornamentals. GREEN PEACH APHID (Myzus persicae) was damaging to many ornamentals and trees in CALIFORNIA in the early part of 1960, persisting over a much longer period of time than normal in some areas of the State. A SPRUCE GALL APHID (Chermes sp.) was common on spruces used as ornamentals in the Juneau area of ALASKA during the 1960 season.

Infestations of several species of APHIDS were heavy on ornamental plants and roses in ARIZONA during the spring of 1960. Moderate to heavy populations of various species occurred on ornamentals over NEVADA, and curled foliage of ornamental flowering hawthorn in UTAH in some instances. Several species infested ornamentals in MISSOURI and various species were abundant on rose, chrysanthemum, pyracantha and tulip, as well as poplar, oak and pine, in MARYLAND during the season.

Heavy infestations of RHODODENDRON LACE BUG (Stephanitis rhododendri) occurred on rhododendron in RHODE ISLAND during mid-July at Johnston, Providence County. Adults of AZALEA LACE BUG (S. pyrioides) were abundant on azaleas in Sussex County, DELAWARE, during mid-May, causing moderately heavy damage. Several species of LACE BUGS were primary pests of ornamentals in CONNECTICUT during 1960 and were again abundant on azaleas, hawthorn, rhododendron, oaks and other ornamentals in MARYLAND during the summer of 1960.

Adults of a SPITTLEBUG (Prosapia bicincta)* were rather abundant, with noticeable injury to new growth of American holly during mid-July in northern New Castle County, DELAWARE.

ROSE LEAFHOPPER (Edwardsiana rosae) conspicuously discolored foliage of cultivated roses throughout UTAH during the 1960 season and became numerous on spirea at Logan and Ogden in the fall. VIRGINIA-CREEPER LEAFHOPPER (Erythroneura ziczac), E. elegans and other species of LEAFHOPPERS damaged Virginia creeper foliage during late summer and fall in many counties in Utah, leaves frequently being killed before late August. Another LEAFHOPPER (E. aclys) was again abundant on redbud throughout INDIANA, most ornamental redbuds being yellow by mid-September.

COCCIDS were reported as infesting and damaging various ornamentals during the 1960 season. Heavy infestations of OYSTERSHELL SCALE (Lepidosaphes ulmi) occurred in Androscoggin County, MAINE, and damage was moderate to lilacs. In RHODE ISLAND, crawlers were first observed about June 13. The coccid was injurious to ornamental maples and lilac in MARYLAND and was reported to have been more plentiful than normal in nurseries in WISCONSIN during the 1960 season. The pest was more numerous this year in WYOMING, damaging many species of trees and shrubs and frequently caused injury in UTAH, especially to ash, poplar, willow and lilac. First crawlers of JUNIPER SCALE (Diaspis carueli) appeared about June 13 in Providence County, RHODE ISLAND, and the pest was damaging to ornamental junipers in several localities of UTAH during the season. PINE NEEDLE SCALE (Phenacaspis pinifoliae) infested many plantings of pine and spruce in IOWA during 1960 and was injurious to various ornamental pines in MARYLAND.

* Fennah, R. G. 1948. Ann. and Mag. Nat. Hist. Ser. 12, 1(9):606.

Infestations of EUONYMUS SCALE (Unaspis euonymi) were very heavy on some euonymus in northern Kent County, DELAWARE, in mid-May. The pest was also injurious to this host in MARYLAND and attacks were heavy in NORTH CAROLINA. In MARYLAND, SAN JOSE SCALE (Aspidiotus perniciosus) was injurious to pyracantha and other ornamentals and WHITE PEACH SCALE (Pseudaulacaspis pentagona) damaged privet, lilac and ornamental cherry. White peach scale also occurred frequently on ornamental and shade trees in NORTH CAROLINA. The collection of CAMPHOR SCALE (Pseudaonidia duplex) on camellia at Gainesville, Alachua County, FLORIDA, on November 16, 1960, constitutes a new State record. During December, the scale was also collected on camellia or azalea in Alachua, Pinellas, Escambia, Hillsborough, Nassau and Polk Counties, for new county records. Camphor scale has previously been reported from Louisiana and is known to occur in the Hawaiian Islands, India, Philippine Islands and Argentina.

OLEANDER SCALE (Aspidiotus hederæ) infested many ornamentals over CALIFORNIA during the 1960 season, heavy populations making plants unsightly rather than causing damage. CALIFORNIA RED SCALE (Aonidiella aurantii) has become widespread in California and now attacks many ornamental shrubs and trees. TEA SCALE (Fiorinia theae) caused considerable damage to citrus trees and camellia plants in Orange County, TEXAS, and isolated infestations were found on camellias during September in LOUISIANA. FLETCHER SCALE (Lecanium fletcheri) continued to be a problem on junipers and arborvitae in IOWA during 1960 and infested Taxus spp. in CONNECTICUT during the season. This scale also occurred on arborvitae in Prosser, WASHINGTON; it was previously recorded at Pullman in 1958. COTTONY-CUSHION SCALE (Iderya purchasi) caused moderate damage over TEXAS during the 1960 season. Light infestations occurred on many ornamental shrubs in CALIFORNIA, with plants being occasionally damaged. Generally, these shrub infestations act as breeding locations for VEDALIA (Rodolia cardinalis).

Various other COCCIDS were reported as damaging or troublesome from several of the states. Hatch and crawler dispersal of Lepidosaphes yanagicola on euonymus and of Pulvinaria floccifera on yew were both observed in the Warwick area of RHODE ISLAND on June 29. Various species of coccids were generally abundant in PENNSYLVANIA during the 1960 season and P. floccifera infested Taxus spp. in CONNECTICUT. In MARYLAND, Ceroplastes sp. was injurious to hemlock and holly and Fiorinia externa was injurious to hemlock and yew. In NORTH CAROLINA, Ceroplastes sp., near ceriferus, was frequently observed on ornamentals, including shade trees.

A MEALYBUG (Geococcus coffeae) was collected on philodendron at Lockhart, Orange County, on September 27, for a new locality record in FLORIDA. The species was first reported in the United States at Apoka, Orange County, in 1958 and again at Oviedo, Seminole County, in 1959. Another MEALYBUG (Trionymus diminutus) occurred on nursery ornamentals and lilies in northern CALIFORNIA during 1960 and heavy infestations of Chionaspis ortholobis occurred on snowbrush ceanothus in the Mammoth Lakes area of Mono County. Continuous infestations of this latter species can seriously damage browse and undercover plants in this area. Lecanium kunoensis infested pyracantha in the Chico area of Butte County, California, during the season, eradication treatment being applied to infested plants. In San Diego County, heavy populations of Parlatoria pittospori occurred on Pittosporum sp. and Melaleuca sp. and were medium on Hakea sp. in the area of the city of San Diego. Varied infestations of Stomacoccus platani occurred over California during 1960, but the species was not as prevalent as in previous years. Asterolecanium arabisidis occurred in San Joaquin, Santa Cruz, Mendocino and Butte Counties. The species is an eradication pest in California when occurring in nurseries, and it severely damages oaks and some shrubs. This pit scale occurred for the first time on sage during the 1960 season.

THRIPS were of some concern in a few areas of the Nation during 1960. General infestations of CUBAN-LAUREL THRIPS (Gynaikothrips ficorum) occurred on Ficus retusa in San Diego and other local areas of San Diego County, CALIFORNIA. Another THRIPS (Frankliniella occidentalis) was severe on many yard and street

ornamentals and general on native plants in California, causing considerable damage during the season. Damage by GLADIOLUS THRIPS (Taeniothrips simplex) was about normal in UTAH, while undetermined species of THRIPS caused some damage to roses and were again abundant in most cultivated and wildflower blossoms in the State during 1960. FLOWER THRIPS (Frankliniella tritici) caused considerable damage to rosebuds in Baton Rouge, LOUISIANA, during May. In RHODE ISLAND, another species of thrips, probably Dendrothrips ornatus, caused drastic damage to a 30-foot privet hedge in Coventry, Kent County, the damage being evident in early July; and Gnophothrips piniphilus caused severe injury to black pine in a nursery in Wakefield, Washington County.

In RHODE ISLAND, a moderate infestation of BOXWOOD PSYLLID (Psylla buxi) developed during mid-May on boxwood in Wakefield. WHITEFLIES were minor pests of ornamentals in CONNECTICUT during 1960 and were generally not as prevalent on ornamentals and native plants during 1960 in CALIFORNIA as in previous years.

BOXWOOD LEAF MINER (Monarthropalpus buxi) was fairly heavy during 1960 in untreated American boxwood in DELAWARE, where pupation was completed and adults were emerging in early May. Adult flights occurred in RHODE ISLAND in the vicinity of boxwood in the Barrington area of Bristol County during late May. A HOLLY BERRY MIDGE (possibly Asphondylia ilicicola), a recent insect in CONNECTICUT, was reported as spreading slowly from the general area in which it was first found in the south central part of the State.

EUROPEAN EARWIG (Forficula auricularia) was a pest and damaging to yard ornamentals from April through August in CALIFORNIA in most of the counties north of Santa Barbara, and caused the usual widespread annoyance and some damage about homes and gardens in UTAH. Light numbers were reported in Cumberland County, MAINE, and reports from other areas in the State infested in 1959 indicate the pest made no substantial headway during 1960.

Several Hymenoptera were reported as damaging and annoying during 1960. BRISTLY ROSE-SLUG (Cladius isomerus) infested roses in Henderson County, NORTH CAROLINA, during mid-June. Bristly rose-slug and CURLED ROSE SAWFLY (Allantus cinctus) were widespread and abundant in ILLINOIS, causing severe browning and defoliation of roses. Browning and defoliation were especially noticeable in multiflora rose hedges. PEAR-SLUG (Caliroa cerasi) larvae were observed as late as November on ornamental plums in Dane County, WISCONSIN, during 1960. ROSE-SLUG (Endelomyia aethiops) damaged roses in UTAH during the season and two undetermined species of Endelomyia infested roses in MISSOURI. A SAWFLY (Neodiprion sp.) caused considerable defoliation of evergreen plantings in southern and western ILLINOIS, with controls being applied in both areas, and GIANT HORNET (Vespa crabro germana) debarked lilac bushes in a few counties of VIRGINIA during the 1960 season.

MITES were also of some concern in various parts of the country during the 1960 season. A buildup of SPRUCE SPIDER MITE (Oligonychus ununguis) occurred on spruce in the vicinity of treated elms in RHODE ISLAND. The species is apparently causing decline and contributing to subsequent death of spruce trees in the neighborhood of the Scituate reservoir in Providence County. In CONNECTICUT, heavy, localized infestations occurred on hemlock, arborvitae, spruce and Taxus spp., but injury was spotty. The species was particularly troublesome on spruce in MARYLAND during the season and was abundant in DELAWARE, causing heavy webbing on spruce trees in late April. In NORTH DAKOTA, infestations were moderate to heavy on spruce, arborvitae and junipers in nursery and home plantings and the pest caused localized damage to ornamental blue spruce in the Portland area of OREGON during the fall months. Heavy populations of spruce spider mite developed on junipers in CALIFORNIA during March.

TWO-SPOTTED SPIDER MITE (Tetranychus telarius) occurred in heavy, localized infestations on hemlock, arborvitae, spruce and Taxus spp. in CONNECTICUT during 1960, but injury was spotty. Infestations ranged moderate to heavy on spruce, arborvitae and junipers in nurseries and home plantings in NORTH DAKOTA and the mite was prevalent on trees and ornamentals in WYOMING, inflicting moderate

damage in many areas. Very little control was conducted in Wyoming during the past season, except on a small amount of ornamentals. Two-spotted spider mite damaged roses in UTAH during the 1960 season and varied populations developed on many ornamentals in CALIFORNIA, with local infestations becoming quite severe on both yard and street plantings.

SOUTHERN RED MITE (Oligonychus ilicis) was very abundant in DELAWARE, with 10-15 per leaf on American holly in northern New Castle County in mid-May, was particularly troublesome on holly in MARYLAND during the year and was also very abundant on azaleas in lathhouses during March in Abita Springs, St. Tammany Parish, LOUISIANA. Light to heavy infestations of CLOVER MITE (Bryobia praetiosa) occurred on ivy plantings in the Potter Valley of Mendocino County, CALIFORNIA.

Several species of SPIDER MITES were troublesome on various ornamentals in MARYLAND during 1960, especially during hot weather. In FLORIDA, Eotetranychus lewisi was collected on poinsettia at Homestead, Dade County, on November 15, and at Deland, Volusia County, on November 28. This mite can probably be found everywhere poinsettias are grown in Florida, although it was only recently collected in the State. Infestations of undetermined species of spider mites occurred on evergreens in Lincoln County, NEBRASKA, during 1960 and varied from light to heavy on broadleaf and evergreen shrubs and trees in NEVADA, requiring extensive control throughout the latter State. Heavy infestations of undetermined species were present on home plantings statewide in ARIZONA throughout the summer and fall of 1960. In CALIFORNIA, Schizotetranychus celarius was heavy on several species of bamboo in the Carmel Valley, Monterey County. Moderate populations of E. lewisi damaged poinsettias in San Diego County.

In CALIFORNIA, heavy populations of CYCLAMEN MITE (Steneotarsonemus pallidus) developed on ivy in the Oxnard area of Ventura County and the pest severely injured begonias in a large commercial greenhouse in NORTH CAROLINA during the 1960 season. A buildup of an unspecified species of ERIOPHYID MITE was noted on ash over much of MONTANA during the past year.

GARDEN SLUGS were present in heavy numbers and caused annoyance in the Boothbay area of MAINE during 1960, and were also destructive in areas of ALASKA other than the southeastern section where they usually are annoying. BROWN GARDEN SNAIL (Helix aspersa) was recorded for the first time in WASHINGTON, causing considerable damage to flowers in Pacific County.

Lawn and Turf Insects: Some additional pests of grasses included FRIT FLY (Oscinella frit) which damaged foliage of turf on golf greens in Fairfield, Hartford and New Haven Counties, CONNECTICUT. Injury was localized in all instances. Infestations of a CHINCH BUG (Blissus leucopterus insularis) were heavy on St. Augustine grass in GEORGIA during 1960. In NEW MEXICO, a MIRID (Orthotylus coagulatus) was very destructive to Tif-green Bermuda grass lawns in the Las Cruces area of Dona Ana County and in Sierra County, and a GRASS BILLBUG (Sphenophorus phoeniciensis) became a problem on Bermuda grass during the summer months in Dona Ana County. A SNAIL (Vallonia pulchella) became locally heavy in lawns in CALIFORNIA during the 1960 season, but apparently was not damaging. GRANULATE CUTWORM (Feltia subterranea) was damaging to dichondra lawns generally in California, with controls required in a few local areas. A WEBWORM (Crambus sperryellus) was also a general lawn pest in California, infestations becoming severe in a few local areas and requiring controls. Infestations of FALL ARMYWORM (Laphygma frugiperda) ranged moderate to heavy on lawns over GEORGIA during the season.

Shade Tree Insects: Various species of Lepidoptera were reported during 1960 as infesting and damaging shade trees, the degree of damage depending upon the pest species, as well as the host and geographical area involved. FALL WEBWORM (Hyphantria cunea) was one of the more important species during the season. Populations were considerably above normal in MAINE, damage being found for the most part on roadside brush, although severe damage occurred to untreated ornamental and shade trees in many areas. In RHODE ISLAND, larvae were hatched in the Warwick area of Kent County by June 29. Larvae fed on planetrees, boxelder, sycamore, sweetgum and wild cherry throughout DELAWARE, with heaviest infestations and injury occurring in southeastern Sussex County during late June to early August, as they did the previous year. Fall webworm was very conspicuous over VIRGINIA during the past season, especially on sourwood and persimmon, and was light to moderate in GEORGIA, similar to 1959.

Light to medium infestations of fall webworm were common on a wide variety of native trees in the eastern two-thirds of OKLAHOMA again this year, while in KANSAS, many elms were infested early in August, but the populations died out from natural causes. In INDIANA, the fall generation of this pest was unusually heavy in the most southern counties. Larvae first appeared in Racine County, WISCONSIN, the last week of July but webs were scarce throughout the area. However, webs were more evident near Endeavor, Marquette County, although in the State as a whole populations were low.

Fall webworm damaged shade trees throughout NEW MEXICO during the 1960 season. Larvae also became a nuisance in many areas where they crawled on walls, walks and entered homes. Damage continued high on trees in Bandalier, Chaco Canyon and Aztec Ruins National Monuments during 1960, where the pest caused complete defoliation in many areas during 1959. Adults began to appear the week ending March 19 at Salem, OREGON, and emergence peaked in early June with over 60 adults collected each night for 10 nights at one blacklight trap. Larval infestations were the heaviest on record in the Willamette Valley. Untreated walnut trees, a common shade tree in most cities and towns in Oregon, were heavily attacked.

PINE NEEDLE MINER (Exoteleia pinifoliella) was more abundant on pitch pine in NEW HAMPSHIRE during 1960 than in 1959 and adults of PALE TUSsock MOTH (Halisidota tessellaris) were abundant in the light trap in the Kingston area of Washington County, RHODE ISLAND, on July 25. In DELAWARE, larvae of another GELECHIID (Fascista cercerisella) caused heavy injury between webbed leaves of redbud trees in New Castle County during mid-July and larvae of JUNIPER WEBWORM (Dichromeris marginella) heavily webbed leaves of juniper in northern New Castle County in mid-May. Juniper webworm was collected for the first time in FLORIDA at Daytona Beach, Volusia County, on Irish juniper on January 27, 1960. Determination was made by H. W. Capps. Two other WEBWORMS, Salebria afflictella and Tetralopha melanogrammos, were present in Kent County, DELAWARE, in early July on sweetgum trees, causing light injury and again in mid-August in one area of Sussex County where they caused moderately heavy injury. Infestations of these two webworms did not increase over those of previous years in the State. PINE WEBWORM (Tetralopha robustella) was common on young stands of various ornamental pines in several localities of VIRGINIA, and infestations of another WEBWORM (T. asperatella) occurred in the Turkey Run State Park in INDIANA. Several severe infestations of an undetermined WEBWORM occurred at Linton, Emmons County, and at Harvey, Wells County, NORTH DAKOTA, where ornamental cotoneaster plantings were defoliated.

During 1960, MIMOSA WEBWORM (Homadaula albizziae) was reported for the first time from Champaign County, ILLINOIS, and continued to spread farther north in INDIANA, infestations being very serious on honeylocust trees in central and southern portions of the State. The pest was also quite severe on honeylocust, as well as mimosa, in the southern half of PENNSYLVANIA. The first adult mimosa webworm was noted in northern Kent County, DELAWARE, on June 11, larvae in Kent and Sussex Counties on mimosa by late June and heavy webbing in early July. Second-generation larvae were well advanced by mid-August and webbing was very noticeable in

early September. Although injury was severe in Delaware during 1960, the pest was not as heavy as during 1959. As in past years, mimosa webworm was severe on mimosa and honeylocust in most sections of MARYLAND during 1960, infested mimosa in many localities of VIRGINIA and caused considerable defoliation of host trees in TENNESSEE. Infestations ranged light to heavy in GEORGIA during the season. Mimosa webworm was collected in FLORIDA on mimosa at Macclenny, Baker County, on July 19, for a new country record. The pest was first found in Florida in 1958, but has yet to be collected in the peninsular portion of the State.

SPRING CANKERWORM (Paleacrita vernata) caused medium damage to live oaks in San Mateo County, CALIFORNIA, as well as causing some damage in OKLAHOMA during the season. Elm, hackberry and locust were so severely attacked in KANSAS communities where dormant sprays were not applied against elm bark beetles that it was difficult to determine when leaves were produced. In NEBRASKA, some damage to foliage of shade trees occurred in the city of Lincoln during early May. A severe population of spring cankerworm defoliated native American elms growing along the Heart River at Belfield, Stark County, NORTH DAKOTA, during June, and light to moderate defoliation occurred on scattered elm trees at Fargo, Cass County, with scattered, light infestations being reported in several other communities. Larvae defoliated trees in central and eastern IOWA during 1960, the infested area covering portions of 5 counties but being less severe than during 1959. Spring cankerworm was very abundant and caused serious defoliation of many elm trees throughout ILLINOIS during April, May and June, and was fairly common on elms in one area of Sussex County, DELAWARE, in mid-April. Many nearly mature larvae of FALL CANKERWORM (Alsophila pometaria) fed heavily on deciduous trees in the Cranston area of Providence County, RHODE ISLAND, in early June, and defoliated large areas of elm, boxwood and other trees in eastern MONTANA during the 1960 season.

TENT CATERPILLARS (Malacosoma spp.) caused some damage in OKLAHOMA during the 1960 season and damage and infestations of various species ranged from light to heavy in various other states. Outbreaks of EASTERN TENT CATERPILLAR (M. americanum) were very light in most areas of RHODE ISLAND during 1960, although a moderate outbreak did occur in the East Greenwich area of Kent County during the season. Infestations were very severe in DELAWARE this year, with highest populations occurring in Kent County. Eggs hatched by mid-April, and by late April larval feeding became quite noticeable along roadsides, especially on apple and wild cherry, reaching a peak in early May. Populations were high on wild cherry, crabapple and apple in most sections of MARYLAND during 1960 but were down from those of 1959. Large numbers appeared across TENNESSEE in the spring, being a nuisance mostly after leaving the webs. The pest caused the usual heavy defoliation of wild cherry in GEORGIA during the season, as well as causing some damage to laurelcherry in East Baton Rouge Parish, LOUISIANA.

Infestations of eastern tent caterpillar were severe but local in KANSAS during 1960 and the pest was common on apple and black cherry trees during April and May in INDIANA. Eastern tent caterpillar was again on the increase in ILLINOIS during 1960 as was the area of infestation. The species was present throughout the northern and southern portions of the State, but was scarce or absent in the central portion. Wild cherry trees 50-60 feet high were completely defoliated. The pest occurred as far north as Price and Ashland Counties in WISCONSIN during 1960. Infestations were considered normal for all of the State except a section of Rock County, where populations were very heavy.

FOREST TENT CATERPILLAR (Malacosoma disstria) damaged maple, ash and apple trees and various shrubs about communities in UTAH during the season and was also a moderate forest and shrub pest in canyons over the State. However, damage during 1960 was much less than that which occurred during the period 1957 through 1959. Also in Utah, GREAT BASIN TENT CATERPILLAR (M. fragile) caused normal injury to poplars in Washington, Kane, Grant and San Juan Counties. On the Pacific coast,

CALIFORNIA TENT CATERPILLAR (*M. californicum*) caused some damage to native oaks in the northern portion of CALIFORNIA during 1960.

Infestations of BIRCH SKELETONIZER (*Bucculatrix canadensisella*) were not as serious in CONNECTICUT during 1960 as in past years. Several species of LEAF MINERS were reported as abundant and injurious in some sections of the Nation during the season. In DELAWARE, mature larvae of *Phyllocnistis liriodendrella* were especially abundant on sucker growth of sweetbay or swamp magnolia in Sussex County late in July and larvae and pupae of *P. liquidambarisella* were abundant in the southern portion of the county in mid-August, especially on new growth of sweetgum trees. Infestations of *P. populiella* were generally higher in MONTANA than for the past 1-2 years. Severe infestations of *Proleucoptera albella* occurred in Montana east of the Rocky Mountains, but caused only light damage to narrow leaf cottonwoods in the Sevier-Piute County area of UTAH. *Paraleucoptera heinrichi* caused severe leaf damage to *Prunus lyoni* in Alameda County, CALIFORNIA.

VARIABLE OAK LEAF CATERPILLAR (*Heterocampa manteo*) caused extensive defoliation of red, white, black and post oaks on several hundred acres in Pushmataha County during early fall, which is the first outbreak of this pest to be reported in OKLAHOMA in several years. WALNUT CATERPILLAR (*Datana integerrima*) defoliated walnut trees in northern INDIANA in late August and was widespread in ILLINOIS, completely defoliating the same host in many areas of that State. YELLOW-NECKED CATERPILLAR (*D. ministra*) populations were light throughout the northern half of Illinois during the 1960 season. A heavy infestation of POPLAR TENT MAKER (*Ichthyura inclusa*) occurred on willows in one area of Sussex County, DELAWARE, during mid-June.

SOLITARY OAK LEAF MINER (*Cameraria hamadryadella*) occurred in very light, local infestations in RHODE ISLAND during 1960, being virtually absent in many areas that were heavily infested during 1959. Although this pest was very destructive in CONNECTICUT in 1958 and 1959, it was practically nonexistent during 1960. BOXELDER LEAF ROLLER (*Gracilaria negundella*) developed heavy infestations and caused severe damage to boxelder in Elko County, NEVADA, during the 1960 season, and another GRACILARIID (*Gracilaria* sp.) rolled leaves of sugar maples in INDIANA.

Heavy infestations of FRUIT-TREE LEAF ROLLER (*Archips argyrospilus*) occurred on oaks in the San Gabriel Valley in Los Angeles County, CALIFORNIA. A LEAF ROLLER (*Archips negundana*) caused local damage in UTAH, and another LEAF ROLLER (*Acleris chalybeana*) was present in Turkey Run State Park in INDIANA during the 1960 season.

GYPSY MOTH (*Porthetria dispar*) was somewhat more abundant in localized areas of NEW HAMPSHIRE during 1960 than it was in 1959. Larvae of WHITE-MARKED TUSSOCK MOTH (*Hemerocampa leucostigma*) infested sycamore trees in Kent County, DELAWARE, in early July, and in late August were common on sycamore in one area of southern Sussex County, causing light injury. CARPENTERWORM (*Prionoxystus robiniae*) severely damaged shelterbelts in eastern MONTANA, along with other borers, and an undetermined CARPENTERWORM bored into understocks and scions of budded and grafted locusts in KANSAS. DOGWOOD BORER (*Thamnosphesia scitula*) occurred in numerous areas of CONNECTICUT during the past season and infested grafted dogwood plantings in several nurseries in the Portland area of OREGON in January. Extensive surveys delimited the premises infested and all stock originating out-of-State. All infested stock was destroyed or fumigated. The first fall record of a MAPLE CALLUS BORER (*Sylvora acerni buscki*) for FLORIDA was collected on silver maple at Gainesville, Alachua County, on September 15. Four adults were collected on that date and there was considerable damage apparent to trunk and larger branches of planted silver maples on the campus of the University of Florida.

A lone infestation of EUROPEAN PINE SHOOT MOTH (*Rhyacionia buoliana*) was discovered in OREGON in a Portland nursery on September 6. The infestation and all host plants in the area were destroyed. Larvae entered buds in Manitowoc County, WISCONSIN, by May 13, and emergence had begun in Door County by July 13. Incidence of the pest increased both in population and nursery infestation during 1960 over those of 1959. European pine shoot moth did some damage to Christmas tree plantings in MICHIGAN, damaged many pines in CONNECTICUT, and pupae were present in red pine tips in RHODE ISLAND on June 3 in Warwick, Kent County. NANTUCKET PINE TIP MOTH (*R. frustrana*) infested Scotch pine in KANSAS, and another PINE TIP MOTH (*Rhyacionia* sp.) was common on young stands of pine in several VIRGINIA localities during 1960. ZIMMERMAN PINE MOTH (*Dioryctria zimmermani*) caused some damage to Christmas tree plantings in MICHIGAN. Maple and sycamore trees were damaged by AMERICAN PLUM BORER (*Euzophera semifuneralis*) in a few locations over CALIFORNIA, and another PHYCITID (*Canarsia* sp.) was abundant on sycamores in many areas of ILLINOIS.

MOURNING-CLOAK BUTTERFLY (*Nymphalis antiopa*) severely damaged Chinese elms in San Benito County, CALIFORNIA, and another NYMPHALID (*Asterocampa celtis*) caused much defoliation of hackberry in KANSAS during the 1960 season.

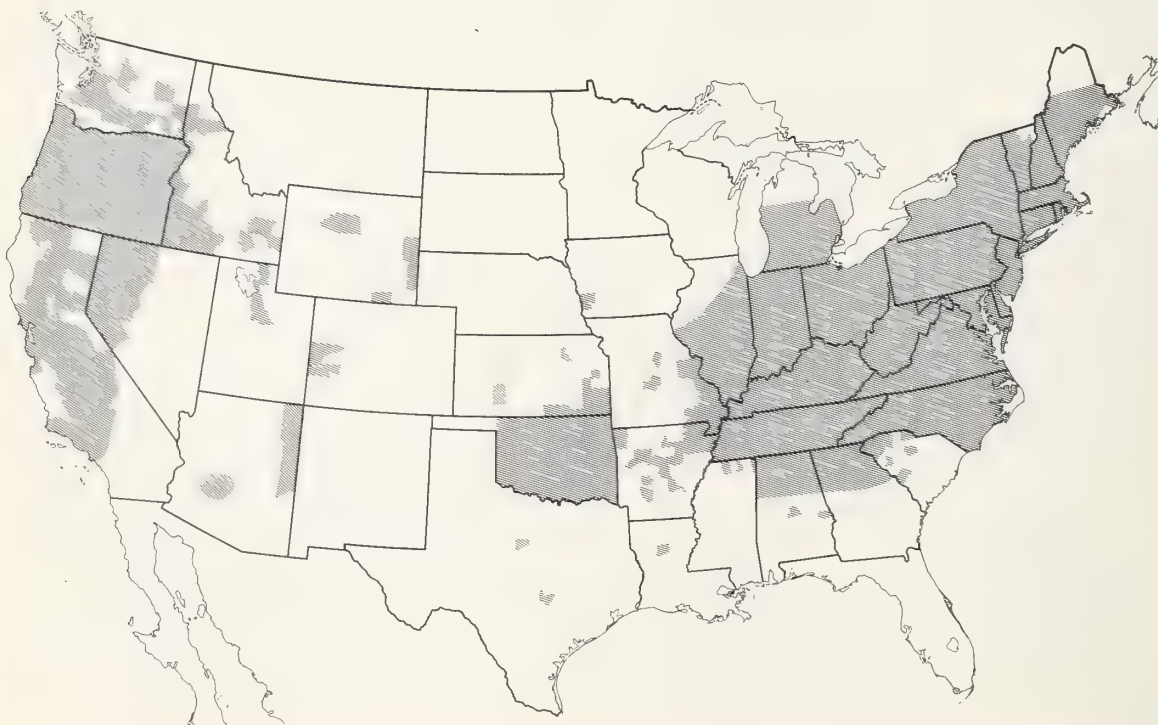
Although several other lepidopterous species were reported as causing damage during 1960 in several of the states, ORANGE-STRIPED OAKWORM (*Anisota senatoria*) was not observed in areas of RHODE ISLAND previously heavily infested, the absence of the pest being unexplained. Larvae of CATALPA SPHINX (*Ceratomia catalpae*) were first noted in DELAWARE on catalpa trees in northern New Castle County in late June, and had caused considerable injury by early July. As in 1959, several catalpa trees in eastern Kent County were completely defoliated by early August, but infestations were localized as in previous years. The pest defoliated catalpa trees in north central counties of INDIANA in August and September and was very abundant, defoliating catalpas in all areas of ILLINOIS. However, parasites were also very abundant in Illinois and killed larvae by the thousands before they matured. An undetermined PSYCHID also was abundant on evergreens and sycamores in many areas of Illinois. PUSS CATERPILLAR (*Megalopyge opercularis*) was a serious pest of shade trees and a hazard to inhabitants of several communities in south central and southeastern OKLAHOMA during late summer and fall, several people being hospitalized as a result of direct contact with this venomous pest. Heaviest infestations occurred in Love, Carter, Johnson, Bryan, Coal, Pittsburg, Choctaw and McCurtain Counties, with limited infestations in a few other areas of the State during the same period. CALIFORNIA OAKWORM (*Phryganidia californica*) was abundant in many locations of CALIFORNIA during 1960, with considerable defoliation of native oaks, and unusually early broods of larvae occurred in the north coastal area of the State. Heavy larval infestations of a SHIELD BEARER (*Coptodisca* sp.) damaged foliage of poplars in central and southwest ARIZONA during June, July and August. Infestations of undetermined LEAF MINERS occurred on poplars and cottonwoods in scattered communities in UTAH and were especially numerous on hardwoods in the southern half of NEW HAMPSHIRE during the 1960 season.

Of the Coleoptera reported as damaging various shade trees during 1960, ELM LEAF BEETLE (*Galerucella xanthomelaena*) appears to have been the most destructive and most widespread. The pest was reported for the first time from IOWA, at Council Bluffs and Glenwood, and was recorded for the first time in Humboldt County, NEVADA. Elm leaf beetle was a major pest of Siberian elms in OKLAHOMA for the third successive year. Infestations continued to spread during these past few years, and by the fall of 1960 could be found throughout the State except in the panhandle area. Elms in many communities of Oklahoma were extensively defoliated, to such an extent in some instances that skeletonized leaves remaining on trees hardly cast shadows. However, in many other communities only elms in certain sections of the city were infested, while remaining areas were relatively free of this pest. Elm leaf beetle migrated into southern KANSAS and, in some instances, into the east central portion of the State.

Adults were present and laying eggs in southern ILLINOIS the week of May 15. By the week of June 26 much defoliation of elms had occurred and new adults were beginning to emerge as far north as Springfield. Elm leaf beetle was exceedingly abundant on Chinese elms in central INDIANA during 1960, with nearly every tree brown by late July.

Elm leaf beetle infestations and injury were equal to, or slightly above normal level during midseason in MAINE, heavy populations developing by late July and causing severe injury to elms in Kennebec, Cumberland and York Counties. The pest was generally prevalent and as troublesome as usual in NEW HAMPSHIRE and adult activity was general in RHODE ISLAND by June 1. The pest was noticeably destructive in PENNSYLVANIA. In DELAWARE, eggs were fairly abundant on elms in eastern Sussex County in mid-May and in northern New Castle County in early June. However, injury was less severe during 1960 than in 1959. The pest was numerous in VIRGINIA and caused considerable defoliation in TENNESSEE during the season.

In ARIZONA, heavy populations of elm leaf beetle defoliated elms in the St. Johns area of Apache County and in some areas of Maricopa County during July and August. This chrysomelid was less destructive to elm foliage in 1960 than during 1958 in several UTAH communities, except in areas of Salt Lake County, where damage was severe. Adults became active early in April in NEVADA due to warm weather, but no eggs were laid until the normal mid-May period. Damage to untreated and improperly treated trees was severe, with the beetle being found as far south as Hawthorne, Mineral County. The pest was very damaging to elms in CALIFORNIA where no control was applied. In a few locations, control was not effective and required repeat applications. Adults appeared in the Salem area of OREGON on April 28 and larvae were reported as abundant on elm at Eagle Pass on May 28. Moderate to heavy damage occurred over the entire State during the 1960 season.



Distribution of Elm Leaf Beetle - 1960

in northern and southern CALIFORNIA and, although the associated disease is not present, the beetle is capable of killing elms. Severe damage occurred in many locations during 1960 and in Sacramento, Sacramento County, it has become necessary to treat large street trees over the entire city in order to protect them. Adults began emerging during mid-May in WISCONSIN, emergence being prolonged considerably into the last week of June. Egg laying commenced about mid-June and second-generation adults began emerging the latter part of July, with heavy feeding the first week of September. In INDIANA, the pest continued to spread Dutch elm disease. This vector of Dutch elm disease continued at the saturation point throughout northern OHIO, where hundreds of thousands of elms have died annually for several years from the disease and elm phloem necrosis. It is difficult to find a dead elm in the State that has not served as breeding material for this beetle.

A WALNUT BARK BEETLE (Pityophthorus juglandis) infested native and black walnuts in the San Fernando Valley in Los Angeles County, CALIFORNIA, and unspecified ELM BARK BEETLES were generally prevalent and as troublesome as usual in NEW HAMPSHIRE. Infestations of TWIG PRUNER (Elaphidion villosum) occurred in the Manchester and Burlington areas of VERMONT and the pest caused moderate damage to oaks in the Saunderstown area of Washington County, RHODE ISLAND, with numerous complaints from most areas of the latter State. DOGWOOD TWIG BORER (Oberea tripunctata) occurred in numerous localities of CONNECTICUT. COTTONWOOD BORER (Plectodera scalator) was of more than usual importance on lombardy poplar in KANSAS during 1960, as was TWIG GIRDLER (Oncideres cingulata) on elm. Twig girdler caused considerable concern to homeowners in central, north central and northeastern OKLAHOMA during September, October and November, with elms being hardest hit, although a wide variety of other shade trees were also affected. This pest also caused moderate to severe damage to shade trees in many parts of TEXAS during the 1960 season. LOCUST BORER (Megacyllene robiniae) was again very severe in Salt Lake County, UTAH, killing and damaging many desirable shade trees, and ROUNDHEADED and FLATHEADED BORERS also caused some damage to maple, ash, poplar and willow trees in the State.

WHITE-PINE WEEVIL (Pissodes strobi) was more abundant in NEW HAMPSHIRE in 1960 than in 1959, infested ornamental spruce and white pine in CONNECTICUT, was damaging in several areas of VIRGINIA and caused some damage to Christmas tree plantings in MICHIGAN. Two LEAF ROLLING WEEVILS (Attelabus bipustulatus and A. nigripes) infested oaks in an area of Kent County, DELAWARE, in late May. Heavy infestations of another WEEVIL (Prionomerus calceatus) in leaves of some magnolia trees in East Baton Rouge and St. Tammany Parishes, LOUISIANA, caused defoliation during May. A SCARAB (Cotalpa sp.) damaged cottonwood trees in Clark County, NEVADA, during April.

Various species of APHIDS caused some degree of damage to shade trees over the Nation during the 1960 season. PAINTED MAPLE APHID (Drepanaphis acerifoliae) was present on maples in northern New Castle County, DELAWARE, in late April and May and became abundant in early June when it caused some leaf drop; however, it was not as serious as in 1959. Also in Delaware, TULIPTREE APHID (Macrosiphum liriodendri) was abundant on tuliptrees during mid-June in New Castle County. WOOLLY ALDER APHID (Prociphilus tessellatus) infested shade maples in several localities of VIRGINIA in late June. Heavy infestations of WOOLLY ELM APHID (Eriosoma americanum) were reported on American elms throughout NORTH DAKOTA and the pest was normally damaging in UTAH, often being heavily parasitized. NORWAY-MAPLE APHID (Periphyllus lyropictus) damaged maples in Ravalli County, MONTANA, but caused less than normal damage in UTAH during 1960. Galls of POPLAR VAGABOND APHID (Mordwilkoja vagabunda) were sometimes very conspicuous in UTAH during 1960, particularly in part of the Uintah Basin, Washington and Kane Counties, and were numerous throughout WYOMING on poplars. In MONTANA, some trees were killed by a SPRUCE APHID (Cinara sp.) in Roosevelt County. BOXELDER APHID (Periphyllus negundinis) was very abundant on boxelder in Kent County, DELAWARE, during May; infestations were heavy and damage severe in many areas of several counties in NEVADA, and the pest was extremely abundant on occasion during the spring in UTAH.

Various other species of APHIDS were reported as troublesome during the season. All stages of Lachnus salignus were abundant on willows in Sussex County, DELAWARE, from early September through October, honeydew attracting numerous wasps and hornets which were also very troublesome. An outbreak of L. salignus occurred on willow in most sections of MARYLAND during the late summer, persisting until late fall. The pest caused extensive damage to weeping willow in several VIRGINIA counties and was severe on the same host at Nephi, UTAH. Also in Utah, galls of Thecabius populi-conduplicifolius were common on poplars in northern counties and galls of Pemphigus sp. were sometimes very conspicuous on poplars, particularly in parts of the Uintah Basin, Washington and Kane Counties. Unspecified species of aphids were moderately troublesome in Utah in the spring on maples, elms, ash, poplar, willow and some other varieties of shade trees, and in the fall were abundant on beech and more generally on linden at Logan. Ash was damaged in CALIFORNIA, primarily in the northern area, by Prociphilus venafuscus, P. fraxinifolii and P. fraxini-dipeltae. Also in California, Cinara piceicola caused heavy defoliation of spruce trees in Vallejo, Solano County; heavy populations of Periphyllus testudinea infested maples during May in Contra Costa County; and Pemphigus populicaulis occurred on poplars in the northern part of the State, particularly in Yolo County. In ALASKA, infestations of Calaphis spp. on birch caused more concern to the public than almost any other insect, and Hamamelistes sp. was common on dwarf birch on the tundra at Nunivak.

Galls of COOLEY SPRUCE GALL APHID (Chermes cooleyi) were very abundant on Colorado blue spruce in several areas of Santa Fe, Taos and Colfax Counties, NEW MEXICO, during the 1960 season, and lighter infestations occurred on spruce on the Lincoln National Forest. This aphid caused below normal damage in UTAH this season, but heavily infested spruce throughout MONTANA and attacked Douglas-fir seedlings in the State Nursery in Roosevelt County. PINE BARK APHID (Pineus strobi) was common on white pine in several areas of VIRGINIA in 1960, and a light infestation of a WOOLLY LARCH APHID (Chermes strobilobius) occurred on larch in the Saunderstown area of Washington County, RHODE ISLAND, during early June.

Of the several species of COCCIDS that were of concern during the 1960 season, EUROPEAN ELM SCALE (Gossyparia spuria) was one of the more important. Infestations of this pest were general on elms in CALIFORNIA, and there was a noticeable buildup where certain chemical treatments were applied for the control of other pests. In UTAH, damage by this coccid was common during the season, and the species was numerous in WYOMING, damaging many species of trees and shrubs. European elm scale continued injurious to American elms in the western half of KANSAS, crawlers emerging June 20 and returning from leaves to branches before October 10. On samples collected October 31, one 8-inch piece of untreated branch was infested with 2,600 nymphs. The pest was more plentiful than normal in nurseries in WISCONSIN this season and was abundant on elms in central Kent County, DELAWARE, in mid-May. The coccid caused much annoyance in some areas of Penobscot County, MAINE, where heavy populations were responsible for heavy deposits of honeydew on cars parked beneath trees.

Spotty infestations of PINE NEEDLE SCALE (Phenacaspis pinifoliae) occurred on pine and spruce in NEW MEXICO in the Carson National Forest in Colfax, Taos, Mora and San Miguel Counties. The pest caused local damage in UTAH and was numerous in WYOMING during the 1960 season, as well as being more plentiful than normal in nurseries in WISCONSIN. Heavy infestations were noted on spruce and Virginia pine in northern New Castle County, DELAWARE, during mid-March.

Many red maples in Sussex County, DELAWARE, were severely injured by heavy infestations of GLOOMY SCALE (Chrysomphalus tenebricosus) in early June, and OBSCURE SCALE (C. obscurus) was injurious to oaks in MARYLAND during the season. SAN JOSE SCALE (Aspidiotus perniciosus) was reported to have been more common than normal in nurseries in WISCONSIN during the year, as was COTTONY MAPLE SCALE (Pulvinaria innumerabilis). Cottony maple scale was abundant on silver maple in northern INDIANA and caused local damage in UTAH. EUROPEAN FRUIT LECANIUM (Lecanium corni) was again damaging to roses at Vernal, UTAH, and

was more plentiful than normal in nurseries in WISCONSIN. The pest infested elm and maple trees in areas of CONNECTICUT where certain hydrocarbons had been used repeatedly as a preemergence control for vectors of Dutch elm disease. TULIPTREE SCALE (Toumeyella liriodendri), an eradication pest in CALIFORNIA, occurs only in San Jose, Santa Clara County, where several large, infested trees were treated. Isolated infestations of this coccid occurred on tulip-poplar in LOUISIANA during May.

Several other coccids were of some concern during the 1960 season. GOLDEN OAK SCALE (Asterolecanium variolosum) was particularly noticeable on valley oaks in the Stockton area of San Joaquin County, CALIFORNIA. Isolated infestations of Phenacoccus acericola occurred on maple in LOUISIANA in June, and Kermes pubescens caused some damage to oaks in OKLAHOMA. Crawlers of Kermes sp. were abundant on oaks in New Castle County, DELAWARE, in late May, and a medium infestation of Lecanium quercifex occurred on oak in the Wakefield area of Washington County, RHODE ISLAND.

Various BUGS were also of some concern during the year. ASH PLANT BUG (Neoborus amoenus) caused extensive damage to leaves of ash trees over IOWA, especially in the northeast section, and populations were down from recent years in MONTANA. Heavy populations of another ASH BUG (N. illitus) occurred on ash trees in San Joaquin, Butte and Santa Clara Counties, CALIFORNIA. In New Castle County, DELAWARE, a PLANT BUG (Plagiognathus albatrus) infested many sycamore trees in mid-June. Adults and nymphs of SYCAMORE LACE BUG (Corythucha ciliata) were abundant on the same host in Sussex County during mid and late August and common statewide, causing considerable yellowing of leaves. Although some areas in Sussex County had heavy populations, this pest was not generally as abundant as during 1959. In western Kent County, adults and nymphs of OAK LACE BUG (C. arcuata) were very common on white oak during late May. Severe infestations of HACKBERRY LACE BUG (C. celtidis) occurred in Madison, Fayette and Tippecanoe Counties, INDIANA, during the season.

A ROYAL PALM BUG (Xylastodoris luteolus) was collected on royal palms in FLORIDA at Ft. Lauderdale, Broward County, on May 19. There appeared to be comparatively few adults, but there was a definite increase indicated by the number of immatures present. Very little damage could be seen, but when fronds were separated, areas where nymphs were present showed some damage. Inspection was approximately one month earlier than past inspections, and probably accounted for the lesser number of actual bugs. A SPITTLEBUG (Clastoptera arizonana) severely damaged acacia trees in southern CALIFORNIA during the 1960 season, damage being so severe that one city removed acacia trees rather than apply controls. In ALASKA, a STINK BUG (Elasmotethus interstinctus) was very noticeable on birch in the Fairbanks area, but scarce in the Matanuska Valley where it had been so numerous previously.

HACKBERRY NIPPLE GALL (Pachypsylla celtidismamma) adults occurred in moderate numbers in several counties of southeast NEBRASKA during the last half of April and fall movements the first half of October were extremely numerous in the eastern part of the State. Large adult numbers of another PSYLLID (Pachypsylla sp.) occurred on twigs of hackberry in KANSAS in mid-April, depositing eggs on the closed buds. In UTAH, moderate numbers of HACKBERRY PSYLLID (Psylla negundana) occurred during the season. Another PSYLLID (P. uncatoides) was a serious pest of acacia generally over CALIFORNIA. Controls were applied to save trees as heavy limb kill and even complete kill resulted from continuing attacks. Still another PSYLLID (Pachypsylla sp., near celtidismamma) was heavy on hackberry in Fresno County. This is the only known infestation and is new to the State.

A GALL MIDGE (Dasyneura gleditschiae) was again very serious on Moraine locusts in CONNECTICUT, but not as serious on Shademaster, a variety of this particular locust group. Several generations of the pest occurred on Sunburst and Moraine locusts in the Carolina area of Washington County, RHODE ISLAND, during the 1960

season. A LOCUST MIDGE (*D. pseudacaciae*) rolled together the midribs of many leaves of black and honeylocusts in New Castle County, DELAWARE, during early June, and was very troublesome on varieties of honeylocust in IOWA. GALL MIDGES (*Dasyneura* spp.) were very noticeable on honeylocust in Lincoln, NEBRASKA. General infestations of WALNUT HUSK FLY (*Rhagoletis completa*) occurred in black walnuts in southern CALIFORNIA during 1960.

Several species of SAWFLIES were of some concern on deciduous and coniferous trees in various sections of the Nation during 1960. BIRCH LEAF MINER (*Fenusa pusilla*) was common in MAINE, generally troublesome throughout NEW HAMPSHIRE, and continued to defoliate birch in VERMONT, being especially heavy in Orleans County. Adults were generally active in RHODE ISLAND in mid-May, with many infestations in gray and white birch in all areas of the State by mid-June, and the pest was generally troublesome throughout CONNECTICUT during the season. Infestations occurred in scattered communities of UTAH and adults began emerging in planted birch in a nursery in Portland, OREGON, in early May, where serious damage occurred to several thousand young trees later in the spring as succeeding generations were not controlled. In MONTANA, an undetermined species of BIRCH LEAF MINER was very common and damaging on birch trees in Lewis and Clark County. ELM LEAF MINER (*F. ulmi*) was again common in elm leaves in southern Sussex County, DELAWARE, during the spring of 1960, and occurred in large numbers in elms over NORTH DAKOTA, along with WOOLLY ELM APHID (*Eriosoma americanum*), and caused some defoliation of infested trees.

Mature larvae of DUSKY BIRCH SAWFLY (*Croesus latitarsus*) occurred on black birch in New Castle County, DELAWARE, in mid-September, and the pest was common in birches this season in Dane County, WISCONSIN. Young larvae of WILLOW SAWFLY (*Nematus ventralis*) were still hatching, with some injury noticeable, in western Kent County, DELAWARE, in early May, and by early August second-generation larvae were abundant on willows in the central portion of the county, causing considerable injury. However, the extensive defoliation of willows by this species in 1959 did not reoccur during 1960. Also in Delaware, an OAK-SLUG (*Caliroa* sp., probably *quercus-alba*) occurred on oak in northern Kent County and caused noticeable injury in late July. BROWN-HEADED ASH SAWFLY (*Tomostethus multicinctus*) infested ash in one county of VIRGINIA during May.

Larvae of RED-HEADED PINE SAWFLY (*Neodiprion lecontei*) infested pines in the Cranston area of Providence County, RHODE ISLAND, during mid-August. Red-headed pine sawfly was common on shortleaf, white and jack pines in VIRGINIA, as were WHITE-PINE SAWFLY (*N. pinetum*) and *N. pratti pratti*, the latter species being the most prevalent species of sawfly encountered in Virginia during 1960. An undetermined WEB-SPINNING SAWFLY was very abundant in some scattered areas throughout the northern two-thirds of ILLINOIS during the year, and a SAWFLY (*Acordulecera* sp.) infested oak in KANSAS.

An OAK GALL (*Callirhytis seminator*), which is not too common in MAINE, was present in the Orono area, Penobscot County, during June, but infestations and damage were not determined. However, another OAK GALL (*C. ventricosa*) was common on willow oaks in northern New Castle County, DELAWARE, in early May. Various CYNIPID GALLS were numerous on many pin oaks in KANSAS, severely curling and distorting leaves in some instances, but injury was not considered serious. GALL INSECTS were numerous on various species of trees throughout TEXAS.

WALKINGSTICK (*Diapheromera femorata*) was implicated in severe local outbreaks in northern INDIANA during the 1960 season, one such outbreak resulting in complete defoliation of 10-20 acres of oak. An EARWIG (*Pyragropsis buscki*) was collected in FLORIDA on Washington palm at Coral Gables, Dade County, on June 18 and July 5. This tropical species, discovered in the State only recently, appears to be fairly common in the Miami area in places of concealment on Washington and coconut palms.

MITEs were of some concern on shade trees during the season. EUROPEAN RED MITE (Panonychus ulmi) was particularly troublesome on American elms in MARYLAND, and another SPIDER MITE (Eotetranychus weldoni) caused substantial discoloration of weeping willow, black willow and other willow foliage in many areas of UTAH during the year. There were many complaints concerning galls of MAPLE BLADDER-GALL MITE (Vasates quadripedes) on maple foliage during late May and early June in RHODE ISLAND. Infestations of this pest were moderate in most areas of that State and were common on maple in several areas of VIRGINIA, as well, especially during May. This species was unusually abundant on silver maple trees during the spring in INDIANA and was also abundant during the season in WISCONSIN, causing considerable inquiry. Another ERIOPHYID MITE (Aceria parapopuli) was severely damaging in UTAH at Woodruff, Rich County; Delta, Millard County; Manila, Daggett County; and throughout the Uintah Basin in the northeast area of the State. Eriophyes spp. were common on Populus spp. east of the Continental Divide in MONTANA and caused russetting of honeylocust in North Platte, NEBRASKA. Two other mites were reported from FLORIDA. Tuckerella pavoniformis was found on silk-oak (Grevillea robusta) at West Palm Beach, Palm Beach County, December 18, 1959, for a new State record. Specimens of Tuckerella ornata collected on mango at Indrio, St. Lucie County, on June 10, 1960, were the first specimens of this species in the Florida State Plant Board collection.

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CEREAL AND FORAGE INSECTS IN WASHINGTON:* A damaging population of BANKS GRASS MITE (Oligonychus pratensis) was found on grass seed crop in Garfield County, and limited infestations were found in the Columbia Basin. CLOVER ROOT BORER (Hylastinus obscurus) caused severe damage to untreated red clover seed fields in Lewis County, and CLOVER SEED WEEVIL (Miccotrogus picrostris) was collected for the first time in new white Dutch clover seed fields in Garfield County. The latter species was also abundant and difficult to control in Asotin County. A very heavy and general infestation of a GELECHIID (Chionodes psiloptera) was found in grass seed fields in the foothills area northeast of Spokane during the early spring. GRASSHOPPERS (Melanoplus bilituratus, M. bivittatus, M. packardii and Oedaleonotus enigma) were controlled in 9 counties in the eastern and central sections during 1960 on an estimated 7,300 acres of cropland and 9,500 acres of rangeland. A KATYDID (Steiroxys sp.) also infested rangeland in southern Benton County. PEA APHID (Macrosiphum pisi) populations were the lowest on record on alfalfa in Walla Walla during April, and decreases from previous seasons also noted in 1,000 acres surveyed in Palouse region. It became abundant by July, however, and alfalfa seed fields in the Walla Walla area had to be treated, an unusual occurrence on alfalfa in this area. The year 1960 was the third time in which pea aphid reached destructive levels in alfalfa seed fields in the Yakima Valley; 2-3 times as many as in 1959. The aphid was still abundant on alfalfa hay in the Columbia Basin and in Asotin County in October. SPOTTED ALFALFA APHID (Therioaphis maculata) again infested alfalfa in south central and southeastern areas of the State during September and October.

* See addendum page 187.

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